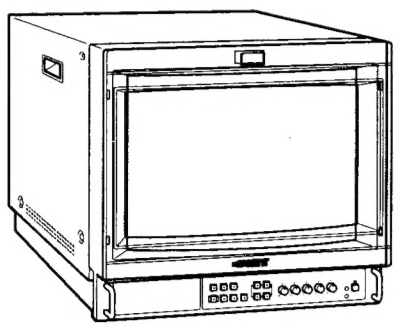
SERVICE MANUAL

MODEL	DEST.	CHASSIS NO.
PHM-14M8U	US/CND	SCC-N81A-A
PHM-20M8U	US/CND	SCC-N81B-A



HD TRINITRON® COLOR MONITOR

SONY®

⚠ WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injuly, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION!!

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÁSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ Á L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS ÁLA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES CONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

SAFETY CHECK-OUT

(US Model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.

3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.

4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair Point them out to the customer and recommend their replacement.

5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.

7. Check the condition of the monopole antenna (if any). Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.

8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.

9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.

2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a coldwater pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

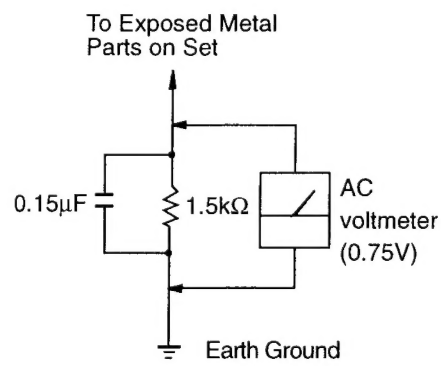


Fig. A. Using an AC voltmeter to check AC leakage.

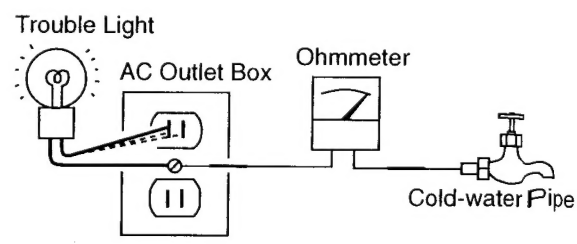


Fig. B. Checking for earth ground.

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10. BLOCK DIAGRAMS

11. DIAGRAMS

SONY

3-860-346-11 (2)

HD Trinitron®
Color Video Monitor

Trinitron

PHM-20M8U
PHM-14M8U

SECTION 1
OPERATING INSTRUCTIONS

This section is extracted from operation manual.

English

Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the spaces provided below.
Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No.
Serial No. _____
_____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

Dangerously high voltages are present inside the unit.
Do not open the cabinet. Refer servicing to qualified personnel only.

In the event of a malfunction or when maintenance is necessary, consult an authorized Sony dealer.

For the Customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

ATTENTION – When the product is installed in a rack:

a) Elevated operating ambient temperature
If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient.
Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra: 0°C to 35°C).

b) Reduced air flow
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

c) Mechanical loading
Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

d) Circuit overloading
Condideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring.
Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

e) Reliable earthing
Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

f) Gap keeping
The upper and lower gaps of rack-mounted equipment should be at least 44 mm (1 3/4 inches).

Table of Contents

About this manual
Before operating the unit, please read this manual thoroughly and retain it for future reference.

The explanation given in this manual can be applied to the following models unless noted otherwise. When explanation differs among models, this is clearly indicated in this manual.
• PHM-14M8U (14-inch monitor)
• PHM-20M8U (20-inch monitor)
Illustrations of the video monitor are of the PHM-20M8U.

Precautions

On safety

- Operate the unit only with a power source as specified in the "Specifications" section.
- The nameplate indicating operating voltage, power consumption, etc. is located on the rear.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for several days or more.
- To disconnect the AC power cord, pull it out by grasping the plug. Never pull the cord itself.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.

On installation

- Allow adequate air circulation to prevent internal heat build-up.
  Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.

On cleaning

To keep the unit looking brand-new, periodically clean it with a mild detergent solution. Never use strong solvents such as thinner or benzine, or abrasive cleansers since they will damage the cabinet. As a safety precaution, unplug the unit before cleaning it.

On repacking

Do not throw away the carton and packing materials. They make an ideal container which to transport the unit.

If you have any questions about this unit, contact your authorized Sony dealer.

EN English

Features

Picture

Trinitron[1] picture tube
Trinitron tube provides a high resolution picture. When the 16:9 picture is received, horizontal resolution is more than 600 TV lines (PHM-14M8U) or 700 TV lines (PHM-20M8U) at the center of the picture.

Beam current feedback circuit
The built-in beam current feedback circuit assures stable white balance.

Inputs

Component/analog RGB input connectors
Component or analog RGB signals from video equipment can be input through these connectors. You can select component or RGB signals from the on-screen menu.

External sync input connectors
The monitor can be operated on a sync signal supplied from an external sync generator.
You can select the INT, EXT, or HD/VD signal in the on-screen menu.

Automatic termination (only terminals with the ⊣⊢ mark)
The BNC input connectors on the rear panel are terminated at 75 ohms inside, when no cable is connected to the loop-through output connectors. When a cable is connected to an output connector, the 75-ohm termination is automatically released.

Functions

Display of the SMPTE 240M/274M signal
The monitor can display the SMPTE 240M/274M signal: Attach the 16:9 frame and select the 16:9 mode in the on-screen menu.

Display of the 525 progressive signal
The monitor can display the 525 progressive signal (VGA mode of Sony DXC-9000 video camera): Select the 4:3 mode in the on-screen menu. When 16:9 is selected, the signal can also be monitored in the 16:9 mode.

Underscan mode
The signal normally scanned outside of the screen can be monitored in the underscan mode.

Note

When the monitor is in the underscan mode, the dark RGB scanning lines may appear on the top edge of the screen. These are caused by an internal test signal, rather than the input signal.

Horizontal/vertical delay mode
The horizontal and vertical sync signals can be checked simultaneously in the H/V delay mode.

Auto/manual degaussing
Degaussing of the screen can be performed automatically when the power is turned on, or manually by pressing the DEGAUSS button.

Area marker function for the 4:3 mode (only for SMPTE 240M/274M signal)
When the SMPTE 240M/274M signal is input, the area marker is displayed to confirm 4:3 aspect. The position of the area marker can be adjusted in the on-screen menu.

On-screen menus
You can adjust the monitor for connected equipment by using the on-screen menus.

Parallel remote interface
The On/Off of the tally lamp or input select can be remotely controlled by connecting the control console, remote control unit, etc. to the REMOTE connector on the rear panel.

Serial remote interface box
By using the supplied serial remote interface box, the monitor can be controlled from personal computers via the RS-422A serial interface.

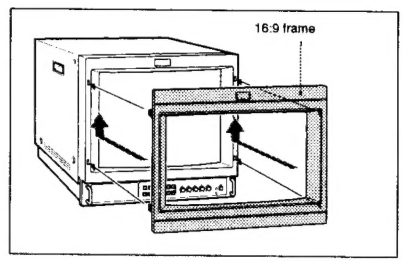
EIA standard 19-inch rack mounting
By using an MB-502B (for PHM-14M8U) or SLR-103A (for PHM-20M8U) Mounting Bracket (not supplied), the monitor can be mounted in an EIA standard 19-inch rack. For details on mounting, see the instruction manual of the mounting bracket kit.

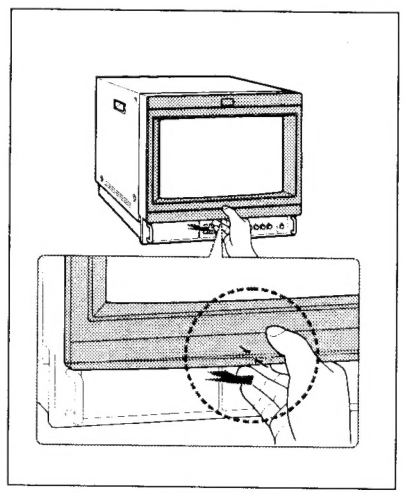
HD SDI (High Definition Serial Digital Interface) Kit
By using the optional HD SDI input adaptor BKM-301HD, the monitor can display the serial digital signal from a digital VCR.

Detachable 16:9 frame
The monitor can display the 16:9 picture of the SMPTE 240M/274M signal or 293M signal by attaching the 16:9 frame.
To monitor the 4:3 picture from a Sony DXC-9000 video camera, remove the 16:9 frame.

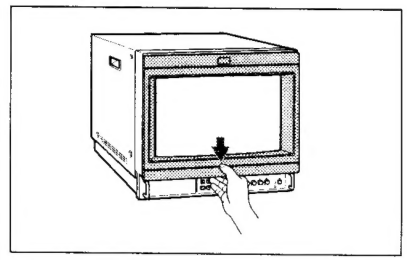
1) Trinitron is a registered trademark of Sony Corporation.

Attaching the 16:9 Frame





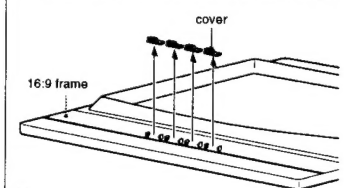
2 **Slide the frame downward.**
The frame is removed.



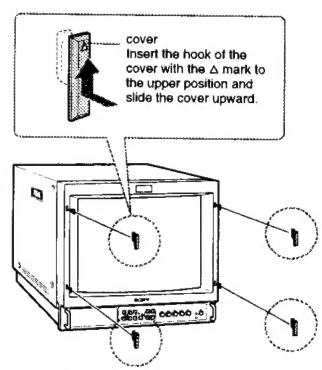
To attach the hole covers

To monitor the 4:3 picture, attach the hole covers to the holes on the front panel of the monitor.

1 **Remove the hole covers from the 16:9 frame.**



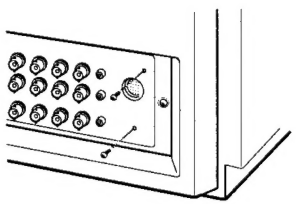
2 **Attach the covers to the holes on the monitor.**



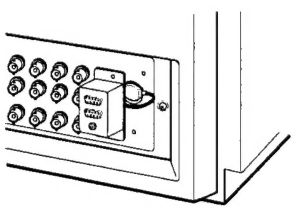
Attaching the Serial Remote Interface Box

To control the monitor from personal computers via the RS-422A serial interface, attach the supplied serial remote interface box.

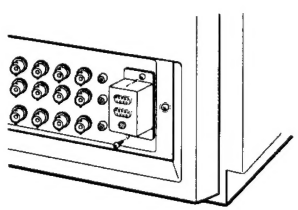
1 **Remove two screws.**



2 **Connect the connector of the serial remote box to the REMOTE connector.**



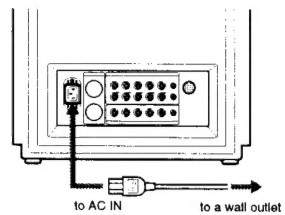
3 **Tighten two screws.**



Power Sources

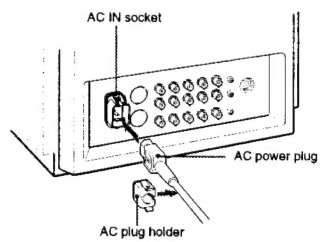
House Current

Connect the supplied AC power cord to the AC IN socket on the rear panel and to a wall outlet.



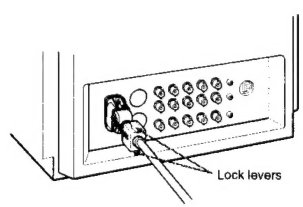
To connect an AC power cord securely with the AC plug holder

1



Plug the power cord into the AC IN socket. Then, attach the AC plug holder (supplied) on top of the AC power cord.

2



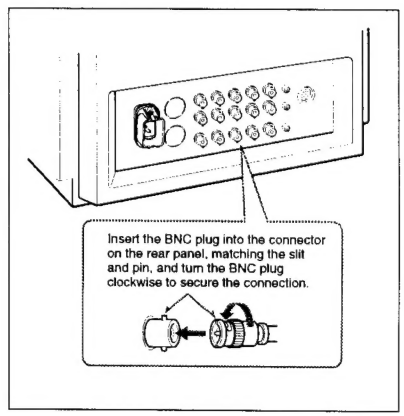
Slide the AC plug holder over the cord until it connects with the attached holder.

To remove the AC power cord

Pull out AC plug holder by squeezing the up and down sides.

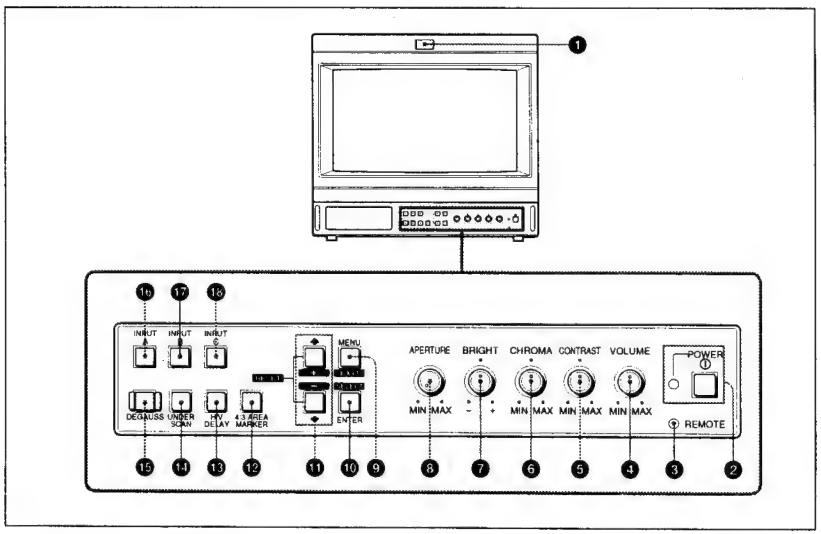
To connect a Cable to a BNC Connector

Connect a coaxial cable with a BNC plug to the BNC connectors on the rear panel as illustrated below.



Location and Function of Parts and Controls

Front Panel



❶ Tally indicator
This indicator lights up. The tally control connection is needed.
For the pin assignment, see "Specifications" on page 18.

❷ ⏻ POWER switch and indicator
Depress to turn the monitor on. The indicator will light up in green. To turn the power off, press this again.

❸ REMOTE indicator
This indicator lights up when you connect a remote controller to the REMOTE connector with the supplied cable or when you set SERIAL REMOTE to ON.
The controls on the front panel do not work when this indicator lights up in PARALLEL REMOTE.
For the trouble detect function, see page 9.
For details on how to connect the cable, see page 18.

❹ VOLUME control
Turn this control clockwise or counterclockwise to obtain the desired volume.

❺ CONTRAST control
Turn clockwise to make the contrast stronger and counterclockwise to make it weaker.

❻ CHROMA (chrominance) control
Turn clockwise to make the color intensity stronger and counterclockwise to make it weaker.

❼ BRIGHT (brightness) control
Turn clockwise for more brightness and counterclockwise for less.

❽ APERTURE control
Turn clockwise for more sharpness and counterclockwise for less.
When the control is set to MIN, the picture becomes flat without corrections.

Note
The CHROMA and APERTURE control settings have no effect on the pictures of RGB signals.

❾ MENU/EXIT button
Press to make the menu appear.
Press to return to the previous screen in the menu.

❿ ENTER/SELECT button
Press to decide a selected item in the menu.

⓫ ↑/+, ↓/– buttons
- Press to move the cursor (▶) or adjust selected value in the menus.
- Press the ↑/+ and ↓/– buttons simultaneously to reset the adjusting item to the factory preset level.

⓬ 4:3 area marker button
Press (light on) to display the 4:3 area marker when the SMPTE 240M/274M signal is displayed. You can confirm the 4:3 aspect. The position of the area marker can be adjusted in the on-screen menu. To display the area marker when the SMPTE 240M/274M signal is received, keep the indicator on.

Note
The 4:3 area marker is not displayed when a signal other than the SMPTE 240M/274M signal is received or when the H/V delay mode is selected.

⓭ H/V DELAY select button
Press this button (light on) to observe the horizontal and vertical sync signals at the same time.
The horizontal sync signal is displayed in the left quarter of the screen; the vertical sync signal is displayed near the center of the screen.

⓮ UNDER SCAN button
Press (light on) for underscanning. The display size is reduced by approximately 5% so that four corners of the raster are visible. By pressing the button again, the display returns to the normal size (light off).

⓯ DEGAUSS button
Press this button momentarily. The screen will be demagnetized.
Wait for 10 minutes or more before activating this button again.

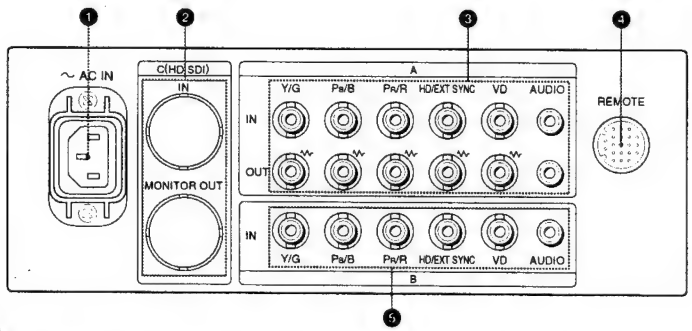
⓰ INPUT A select button
Press to monitor the signal fed through the input A connectors (light on). You can monitor the component signal, RGB signal, EXT SYNC (composite external sync) signal and HD/VD (external sync) signal. Select the signal in the on-screen menu.

⓱ INPUT B select button
Press to monitor the signal fed through the input B connectors (light on). You can monitor the component signal, RGB signal, EXT SYNC (composite external sync) signal and HD/VD (external sync) signal. Select the signal in the on-screen menu.

⓲ INPUT C select button
Press to monitor the serial digital signal from the digital VCR when the optional BKM-301HD HD SDI input adaptor is attached.
For details, see the operating instruction manual supplied with the BKM-301HD.

Trouble detect function
When trouble occur, the REMOTE indicator blinks. When the indicator blinks, press the POWER button to turn off the power and then turn it on again. If the blinking of the indicator does not stop after the above operation, consult your nearest Sony dealer.

Rear Panel



Note

The above illustration is that without the serial remote interface box.

(The ⩘ mark indicates automatic termination.)

❶ AC IN socket
Connect the supplied AC power cord to this socket.
"~" means Alternating Current.

❷ Input C
Use to attach the HD SDI input adaptor BKM-301D (optional).
For details, see the operating instruction manual supplied with the BKM-301D.

❸ Input A IN/OUT connectors
Input connectors for the component signal, RGB signal, EXT SYNC (composite external sync) signal, HD/VD (external sync) signal and audio signal and their loop-through output connectors.
Press the INPUT A select button to monitor the signal fed from these connectors.

Y/G IN, P_B/B IN, P_R/R IN connectors (BNC):
Input connectors for the component signals and RGB signals.
To monitor the component signal
Connect to the YP_BP_R output connectors of a video camera.
Select the signal in the YP_BP_R/GBR menu.
To monitor the analog RGB signal
Connect to the analog RGB output connectors of a video camera.
Select the signal in the YP_BP_R/GBR menu.

Y/G OUT, P_B/B OUT, P_R/R OUT connectors (BNC):
Loop-through outputs of the Y/G IN, P_B/B IN, P_R/R IN connectors.
When the cable is connected to these connectors, the 75-ohms termination of the input is released, and the signal input to the Y/G, P_B/B, P_R/R IN connectors is output from these connectors.
To output the component signal
Connect to the YP_BP_R input connectors of another video monitor.
To output the analog RGB signal
Connect to the analog RGB input connectors of another video monitor.

HD/EXT SYNC IN connector (BNC):
Input connector for the HD signal or EXT SYNC (composite external sync) signal, when this monitor operates on an external sync signal.
Select the signal in the on-screen menu.
To input the EXT SYNC (composite external sync) signal
Connect to a sync generator.
Select the signal in the SYNC SELECT menu.
To input the HD signal when this monitor operates on the HD/VD (external sync) signal
Connect to the Sony video camera DXC-9000, etc.
Select the signal in the SYNC SELECT menu.

HD/EXT SYNC OUT connector (BNC):
Loop-through output of the HD/EXT SYNC IN connector.
When the cable is connected to this connector, the 75-ohms termination of the input is released, and the signal input to the HD/EXT SYNC IN connector is output from this connector.
To output the EXT SYNC (composite external sync) signal
Connect to the external sync input connector of another video monitor to use the sync signal fed through this connector.
To output the HD signal when this monitor operates on the HD/VD (external sync) signal
Connect to the HD input connector of another video monitor to use the sync signal fed through this connector.

VD IN connector (BNC):
Input connector for the VD signal, when this monitor operates on HD/VD (external sync) signal.
Connect to the Sony video camera DXC-9000, etc.
Select the signal in the SYNC SELECT menu.

VD OUT connector (BNC):
Loop-through output of the VD IN connector.
When the cable is connected to this connector, the 75-ohms termination of the input is released, and the signal input to the VD IN connector is output from this connector.
Connect to the VD input connector of another video monitor to use the sync signal fed through this connector.

AUDIO IN jack (phono jack):
Connect to the audio output of video equipment when the component or analog RGB is input.

AUDIO OUT jack (phono jack):
Loop-through outputs of the AUDIO IN connector.

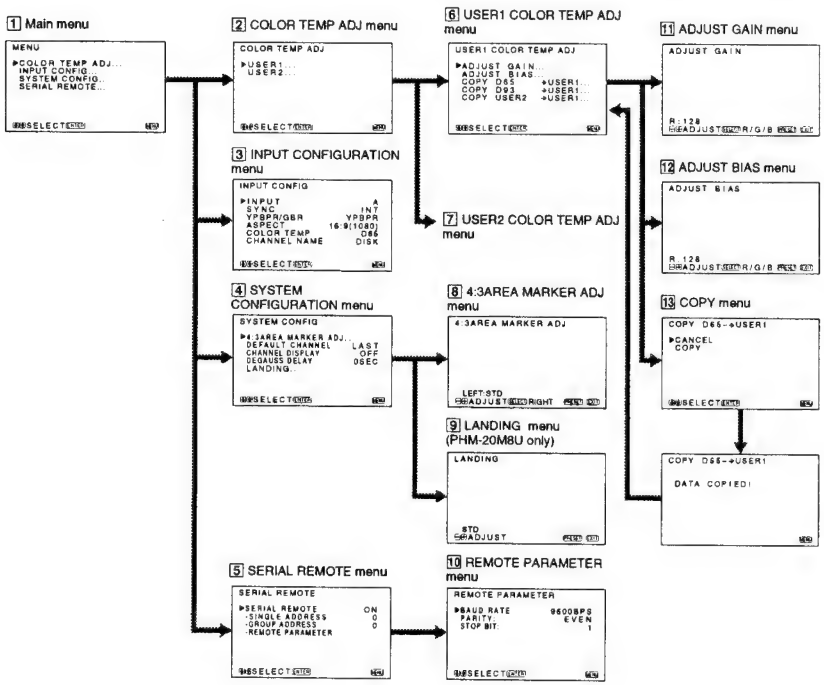
❹ REMOTE connector (20-pin)
Connect to the tally output of a control console, special-effect generator, etc. The tally lamp on the front panel will be turned on and off by the connected equipment. This connector can also be used for connecting a remote control unit or supplied serial remote interface box.
For details on the pin assignment of this connector, see page 18.
For attaching the serial remote interface box, see page 6.

❺ Input B IN connectors
Input connectors for the component signal, RGB signal, EXT SYNC (composite external sync) signal, HD/VD (external sync) signal and audio signal.
Press the INPUT B select button to monitor the signal fed from these connectors.
For details on each connector, please refer to the input A IN connectors.

Using On-Screen Menus

Menu Configuration

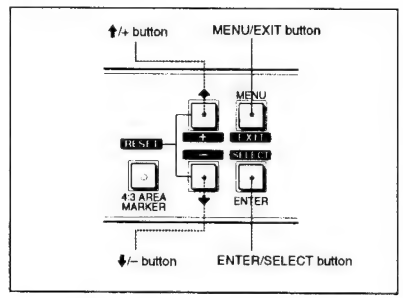
The flow chart shows the different levels of on-screen menus that you can use to make various adjustments and settings.
For details of each menu, see pages 14 to 15.



Operating through Menus

Functions of the buttons

There are four menu operation buttons on the front panel of the monitor.

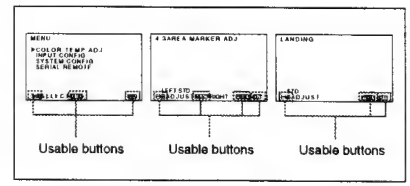


The following tables shows how these four buttons function when using the menus.

Button	To select menu item	To adjust selected menu item
MENU / EXIT	return to the previous menu.	return to the previous menu.
ENTER / SELECT	decide a selected item.	select an item.
↑ / +	move the cursor (▶) upwards.	increase selected value.
– / ↓	move the cursor (▶) downwards.	decrease selected value.

RESET Press the ↑/+ and ↓/– buttons simultaneously. The current adjusting value is reset to the factory setting.

The buttons that can be used on the menus and adjustment screens are displayed at the bottom of the screen. You can perform menu operations using the displayed buttons.



Operating procedures

To display the menu, follow this procedure.

1 **Press the MENU/EXIT button.**
The main menu appears.

2 **Move the cursor (▶) to the desired setting menu by pressing the ↑/+ or ↓/– button.**

3 **Press the ENTER/SELECT button.**
The setting menu selected in step 2 appears.

4 **Move the cursor (▶) to the desired item by pressing the ↑/+ or ↓/– button.**

5 **Press the ENTER/SELECT button.**

The adjustment screen or setting menu selected in step 4 appears, or the item to be adjusted is displayed in yellow.

To close the menu (to return to the regular screen)

Each time you press the MENU/EXIT button, the on-screen menu returns to the one previously displayed. Press the MENU/EXIT button repeatedly until the regular screen appears.

The Contents of menu items

The following sentences show the details of each menu.

Main menu
Select the item to be set.

Setting menu
Select the item to be adjusted or set with the ↑/+, ↓/– and ENTER/SELECT buttons.

Adjusting menu
Adjust the item with the ↑/+ or ↓/– button. The adjusting value is memorized even when the power is turned off.

1 Main menu
Select an item and press the ENTER/SELECT button to go to the following menu.

Note
SERIAL REMOTE is displayed only when the serial remote interface box is attached.

2 COLOR TEMP ADJ menu
Select USER 1 or USER 2 and press the ENTER/SELECT button to go to the following menu.
You can adjust the color temperature.

3 INPUT CONFIGURATION menu
You can select the setting on each input connector. Move the cursor (►) to the desired item by pressing the ↑/+ or ↓/– button and press the ENTER/SELECT button, and the item to be adjusted is displayed in yellow. Set the item by pressing the ↑/+ or ↓/– button. After setting the item, press the ENTER/SELECT button. The set item is displayed in white. To set CHANNEL NAME, after displaying CHANNEL NAME in yellow, select the letter by pressing the ↑/+ or ↓/– button and press the ENTER/SELECT button to select the next letter. After setting the name, press the ENTER/SELECT button.

INPUT: A, B, or C
You can set C only when the BKM-301HD is installed.
SYNC: INT, EXT, or HD/VD
YPBPR/GBR: YPBPR or GBR
ASPECT: 4:3 or 16:9
When the SMPTE 240M or SMPTE 274M is received, 16:9 (1035) or 16:9 (1080) is displayed.
COLOR TEMP: D65, D93, USER 1, or USER 2
CHANNEL NAME: Up to seven letters

4 SYSTEM CONFIGURATION menu
You can set the DEFAULT CHANNEL, CHANNEL DISPLAY, DEGAUSS DELAY or LANDING (PHM-20M8U only).

DEFAULT CHANNEL: LAST, A, B, or C
CHANNEL DISPLAY: OFF or ON
DEGAUSS DELAY: 0SEC to 99SEC

5 SERIAL REMOTE menu
You can adjust the serial remote settings when SERIAL REMOTE is set to ON. For details on other settings, see the Interface Manual for Programmers.

6 USER 1 COLOR TEMP ADJ menu
When the color temperature of USER 1 is adjusted, select ADJUST GAIN, ADJUST BIAS or one of the COPY modes. To display each menu, press the ENTER/SELECT button.

7 USER 2 COLOR TEMP ADJ menu
When the color temperature of USER 2 is adjusted, select ADJUST GAIN, ADJUST BIAS or one of the COPY modes. To display each menu, press the ENTER/SELECT button.

8 4:3AREA MARKER ADJ menu
You can adjust the position of the 4:3 area marker when the SMPTE 240M or SMPTE 274M signal is received.

9 LANDING menu (PHM-20M8U only)
If the color is not uniform even after you press the DEGAUSS button, you can adjust the landing so as to obtain color uniformity in this menu.
The following two methods are available to adjust the landing.

When the signals of the horizontal lines are input and displayed
Press the ↑/+ or ↓/– button until the lines are displayed on the screen as horizontally as possible.

When the signals of the white color are input and displayed
Press the ↑/+ or ↓/– button until the white color on the screen become as uniform as possible.

To reset the setting to standard
Press the ↑/+ or ↓/– buttons at the same time.

10 REMOTE PARAMETER menu
You can adjust the communication parameter of the SERIAL REMOTE connector.

11 ADJUST GAIN menu
Adjust the color balance (gain) of the selected USER mode (USER 1 or USER 2).

12 ADJUST BIAS menu
Adjust the color balance (bias) of the selected USER mode (USER 1 or USER 2).

13 COPY menu
Select the color temperature of the selected USER mode (USER 1 or USER 2) from among D65, D93 and another USER (USER 2 or USER 1).

Specifications

Video signal

System: 1125/60, 1125/59.94 2:1 (SMPTE 240M/274M),
525/59.94 1:1 (The specifications of the DXC-9000 VGA mode signal)
525/59.94 1:1 (based on SMPTE 293M 525P)
For the signal timing chart, see "Signal timing chart" on page 18.

Resolution: PHM-14M8U: 600 TV lines (800 TV lines in the 4:3 mode)
PHM-20M8U: 700 TV lines (900 TV lines in the 4:3 mode)

Aperture correction: 0 dB to +6.0 dB

Frequency response: 24 MHz $^{+0\ dB}_{-3\ dB}$ (in the YPBPR mode)
22 MHz $^{+0\ dB}_{-3\ dB}$ (in the GBR mode)

CRT

PHM-14M8U
- 14-inch HR trinitron tube
- AG pitch: 0.25 mm
- Effective picture size (W/H/D):
  267 × 151 × 307 mm (in the16:9 mode)
  (10 5/8 × 6 × 12 1/8 inches)
  267 × 200 × 331 mm (in the 4:3 mode)
  (10 5/8 × 7 7/8 × 13 1/8 inches)
- Chromaticity: SMPTE-C phosphor

PHM-20M8U
- 20-inch HR trinitron tube
- AG pitch: 0.3 mm
- Effective picture size (W/H/D):
  388 × 218 × 445 mm (in the16:9 mode)
  (15 3/8 × 8 5/8 × 17 5/8 inches)
  388 × 292 × 484 mm (in the 4:3 mode)
  (15 3/8 × 11 1/2 × 19 1/8 inches)
- Chromaticity: SMPTE-C phosphor

Picture performance

Normal scan: 7 % over scan of CRT effective screen area
Under scan: 5 % underscan of CRT effective screen area
H. linearity: Less than 5.0 % (typical)
V. linearity: Less than 5.0 % (typical)
Convergence
- Central area: PHM-14M8U: 0.4 mm (typical)
  PHM-20M8U: 0.5 mm (typical)
- Peripheral area: PHM-14M8U: 0.5 mm (typical)
  PHM-20M8U: 0.6 mm (typical)

Raster size stability: H: less than 1.0%, V: less than 1.0%
High voltage regulation
Less than 1.0 %
Color temperature: D65/D93/USER1/USER2

Inputs

Input A/B
- Y/G, PB/B, PR/R IN
  BNC connector (×6)
  YPBPR: 0.7 Vp-p, GBR: 0.7 Vp-p
  When the sync signal is supplied with the Y/G signal, tri-level sync signal 0.6 Vp-p, or used with the internal sync signal of the negative sync signal 0.3 Vp-p, 75 ohms auto termination function
- EXT SYNC IN (common to HD input connector)
  BNC connector (×2)
  4 Vp-p ±6 dB, sync negative
  usable tri-level sync signal 0.6 Vp-p,
  75 ohms auto termination function
- HD IN (common to EXT SYNC input connector)
  BNC connector (×2)
  4 Vp-p ±6 dB, sync negative or positive (same polarity as the VD IN)
  75 ohms auto termination function
- VD IN: BNC connector (×2)
  4 Vp-p ±6 dB, sync negative or positive (same polarity as the HD IN)
  75 ohms auto termination function
- AUDIO IN: Phono jack (×2), −5 dBu[1], more than 47 kilohms

REMOTE: 20-pin connector (×1)
See the pin assignment on page18.

1) 0 dBu = 0.775 Vr.m.s

Outputs

Input A
- Y/G, PB/B, PR/R OUT
  BNC connector (×3)
  Loop-through output
- EXT SYNC OUT (common to HD output connector)
  BNC connector (×1)
  Loop-through output
- HD OUT (common to EXT SYNC output connector)
  BNC connector (×1)
  Loop-through output
- VD OUT: BNC connector (×1)
  Loop-through output
- AUDIO OUT: Phono jack (×1)
  Loop-through output

Speaker output: Output level: 0.8 W

General

Power consumption: PHM-14M8U: 110 W, 1.4 A
(When the HD SDI input adaptor is used: 124 W, 1.5 A)
PHM-20M8U: 150 W, 1.8 A
(When the HD SDI input adaptor is used: 164 W, 2.0 A)

Power requirement: PHM-14M8U: AC 120V, 1.5 A, 50/60 Hz
PHM-20M8U: AC 120V, 2.0 A, 50/60 Hz

Operating temperature
0 to +35°C (32 to 104°F)

Storage temperature
−10 to +40°C (14 to 104°F)

Humidity: Less than 90% (no condensation)

Dimensions
(W/H/D, when the 16:9 frame is not attached, refer to the sizes in the parentheses.)
PHM-14M8U:
approx. 346 × 340 × 467 (460) mm
(approx. 13 5/8 × 13 1/2 × 18 1/2 (18 1/8) inches)
PHM-20M8U:
approx. 450 × 458 × 557 (550) mm
(approx. 17 3/4 × 18 1/8 × 22 (21 3/4) inches)

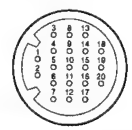
Mass: PHM-14M8U: approx. 19 kg
(approx. 41 lb 14 oz)
PHM-20M8U: approx. 34.4 kg
(approx. 75 lb 13 oz)

Accessory supplied:
- AC power cord (1)
- AC plug holder (1)
- Tally label (1)
- Cable with a 20-pin connector (1)
- 16:9 frame (1)
- Serial remote interface box (1)
- Operating instructions (1)

Design and specifications are subject to change without notice.

Pin assignment

REMOTE connector (20-pin mini-DIN)



Pin No.	Signal	Description
1	NC	Brown
2	H/V delay	Red
3	5V (for serial remote)*	Orange
4	SERIAL ON/OFF (for serial remote)	Yellow
5	Degauss	Green
6	RX (for serial remote)	Blue
7	Tally	Purple
8	INPUT B	Gray
9	NC	White
10	GND	Black
11	GND	Pink
12	GND	Light Blue
13	INPUT A	Orange/white
14	NC	Yellow/white
15	GND	Green/white
16	TX (for serial remote)	Blue/white
17	Parallel remote	Purple/white
18	INPUT C**	Gray/white
19	Under scan	Pink/white
20	4:3 area marker	Light Blue/white

* Be careful not to short-circuit the 3 pin (5 V).
**When the HD SDI input adaptor is used.

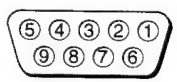
How to connect a remote control unit

Connect No.17 pin to one of the GND pins (No.10 - 12, and 15 pin), then connect pins for the functions you want to use to other GND pins (No.10 - 12, and 15)

How to light the tally lamp

Connect No.7 pin to one of the GND pins (No.10 - 12, and 15).

SERIAL REMOTE connector (D-sub 9-pin)



Pin No.	Signal
1	GND
2	TX–
3	RX+
4	GND
5	NC
6	GND
7	TX+
8	RX–
9	GND

TALLY connector on the serial remote box

When the serial remote box is installed and you want to use the TALLY lamp on the front panel, connect the cable with the phono plug to the TALLY connector. When the TALLY connector is short-circuited, the TALLY lamp lights up.

Signal Timing Chart

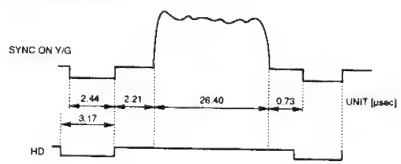
Timing chart of 4:3 525 progressive mode (525/59.94 1:1)

The signal phase of this mode is for the Sony DXC-9000 video camera.

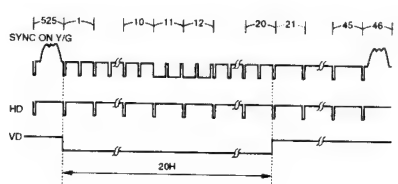
Note

When the 525 progressive signal or VGA signal from a computer is received, the picture phase may be off-center.

Horizontal sync



Vertical sync



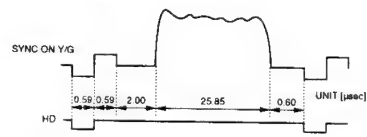
Timing chart of SMPTE 240M/274M HD/VD signal (1125/60, 1125/59.94 2:1)

Input the HD signal of the same phase as the negative part of tri-level sync signal and the VD signal of the same phase as the vertical sync signal.

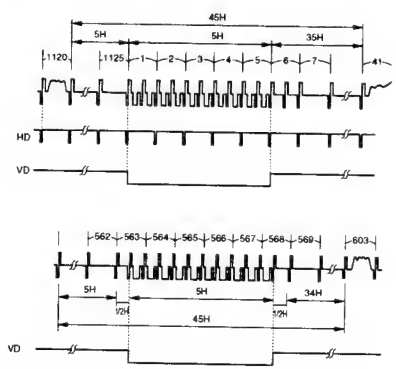
Note

The HD/VD signal is specified for the SMPTE 240M/274M signal. This HD/VD signal timing chart is unique to this unit.

Horizontal sync



Vertical sync



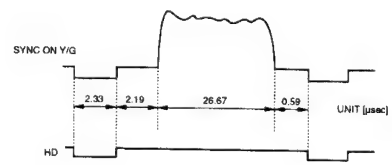
Timing chart of 16:9 525 progressive mode (525/59.94 1:1)

Input the HD signal of the same phase as the part of sync signal and the VD signal of the same phase as the vertical sync signal.

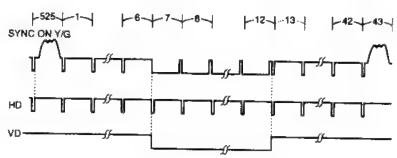
Note

The HD/VD signal is not specified for the SMPTE 293M 525P. This HD/VD signal timing chart is unique to this unit.

Horizontal sync

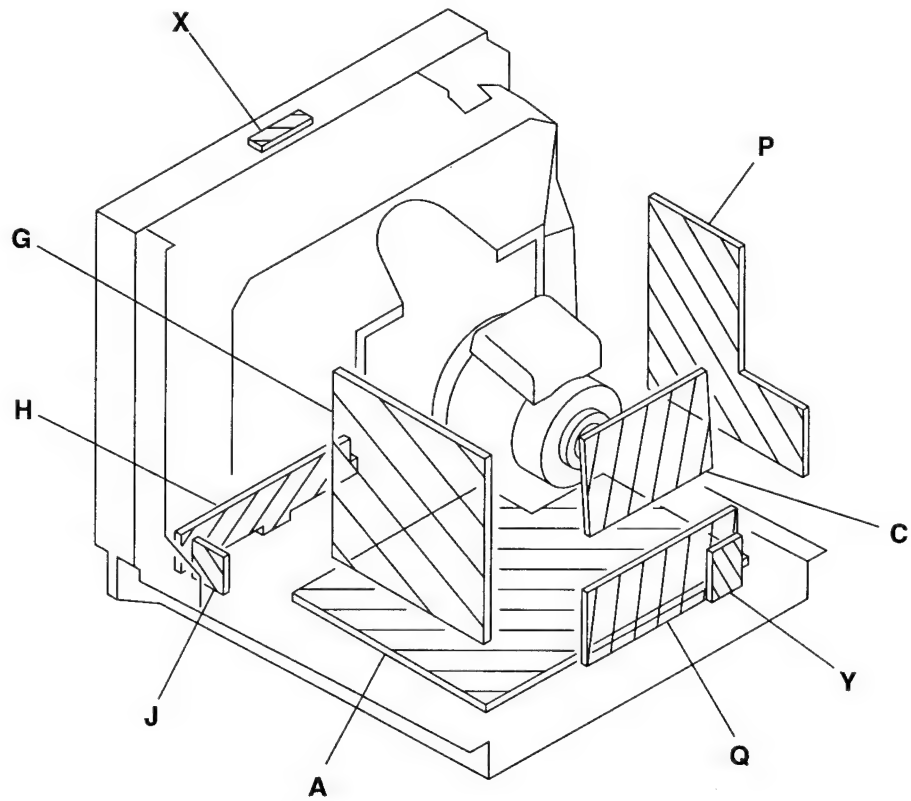


Vertical sync



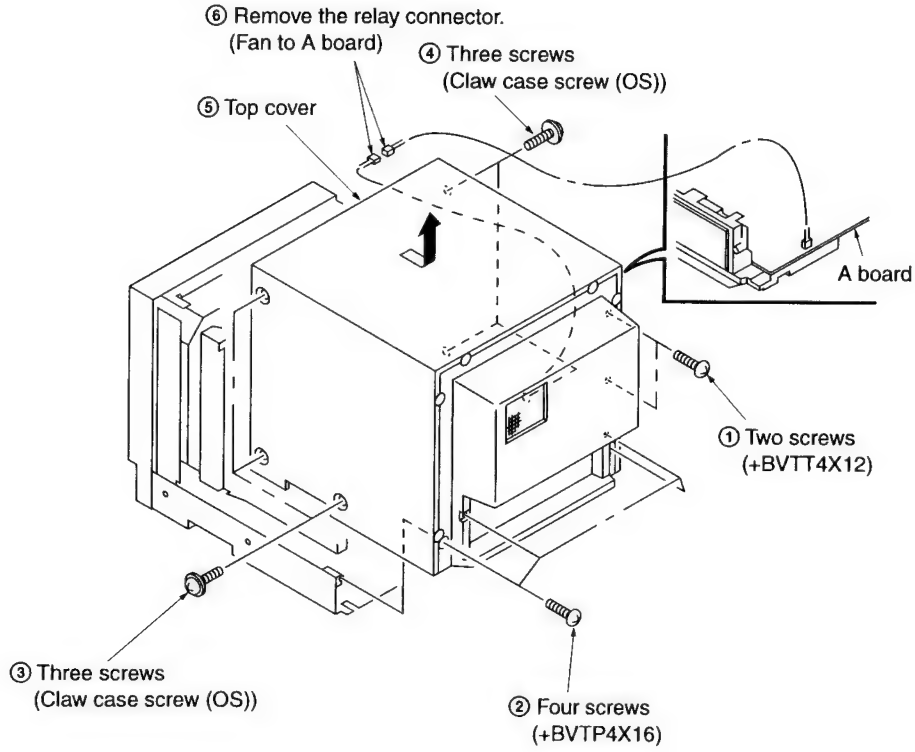
SECTION 2
SERVICE INFORMATIONS

2-1. CIRCUIT BOARDS LOCATION

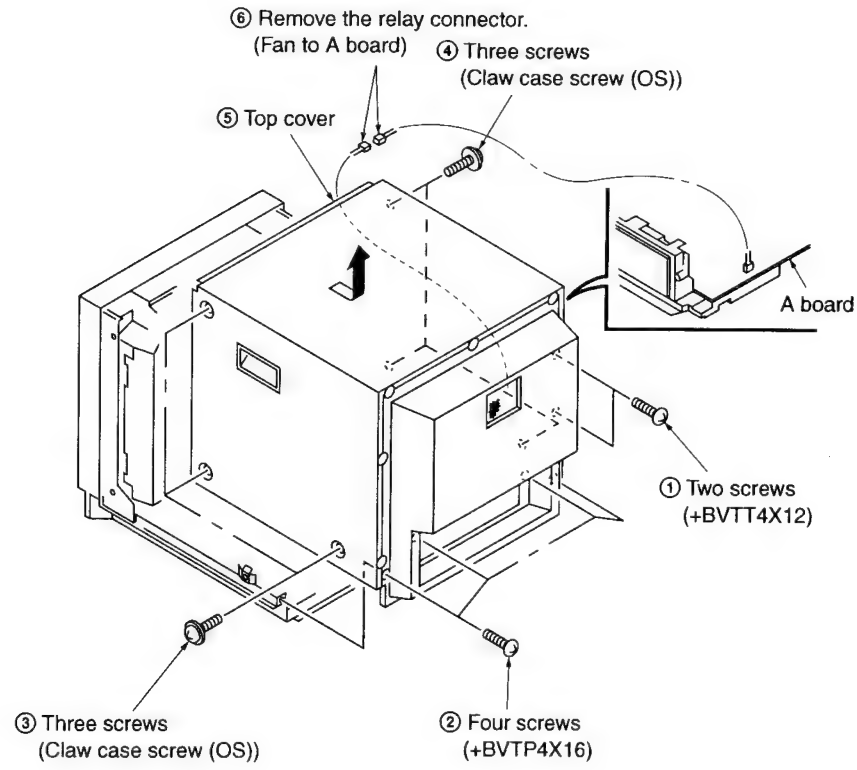


2-2. DISASSEMBLY

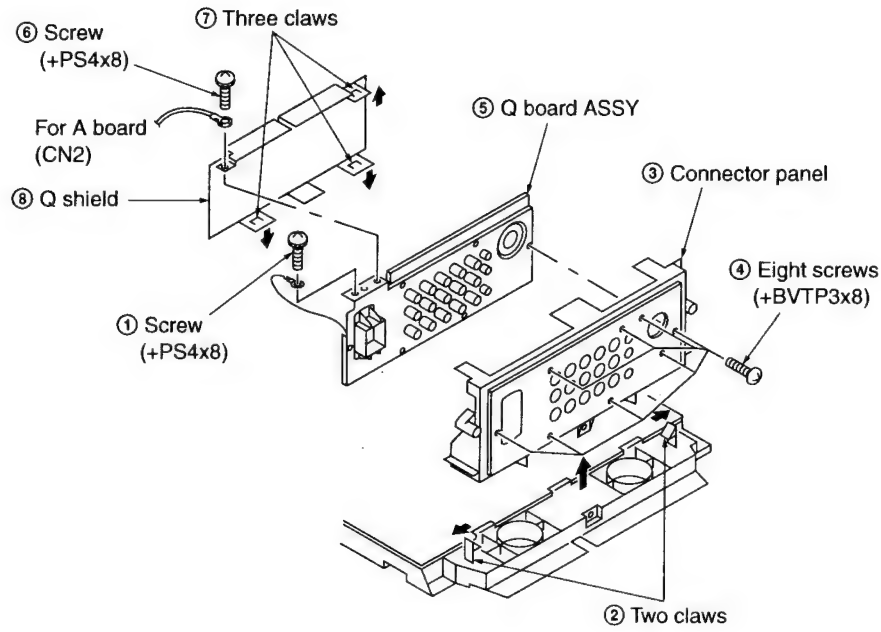
2-2-1. Cover Removal (14inch)



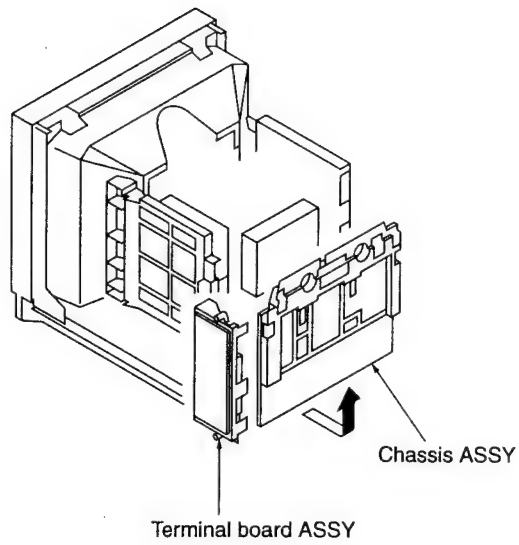
2-2-2. Cover Removal (20inch)



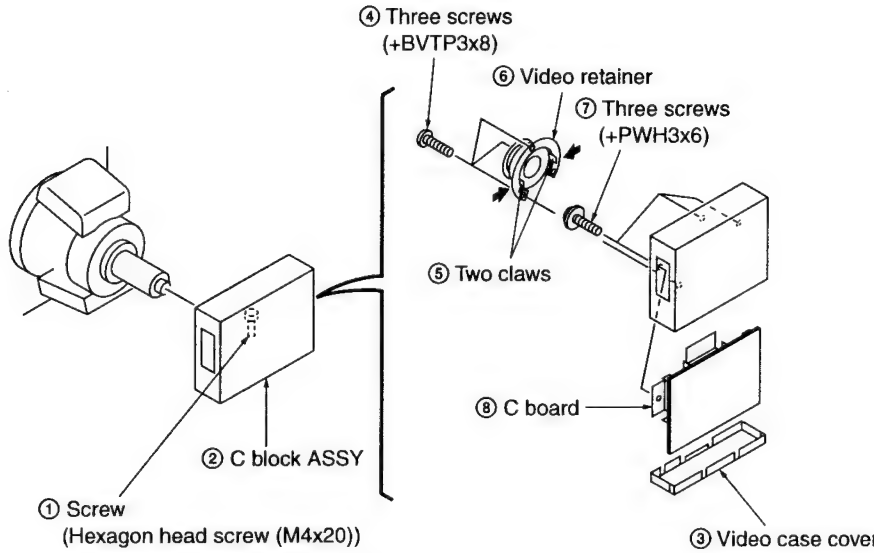
2-2-3. Q Board Removal



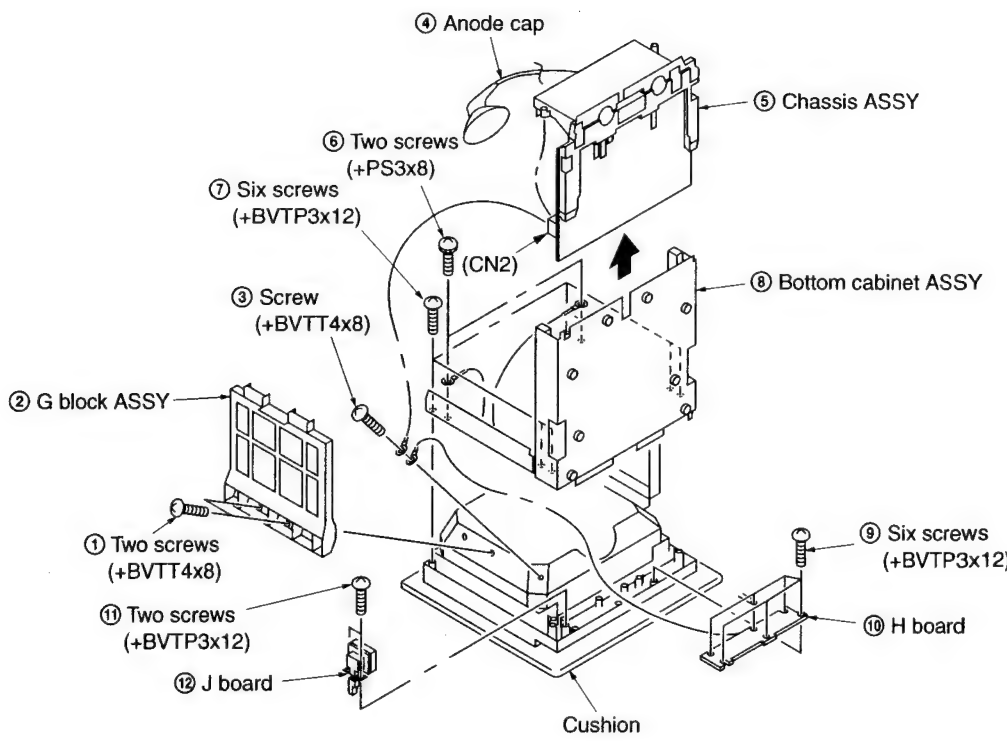
2-2-4. Service Position



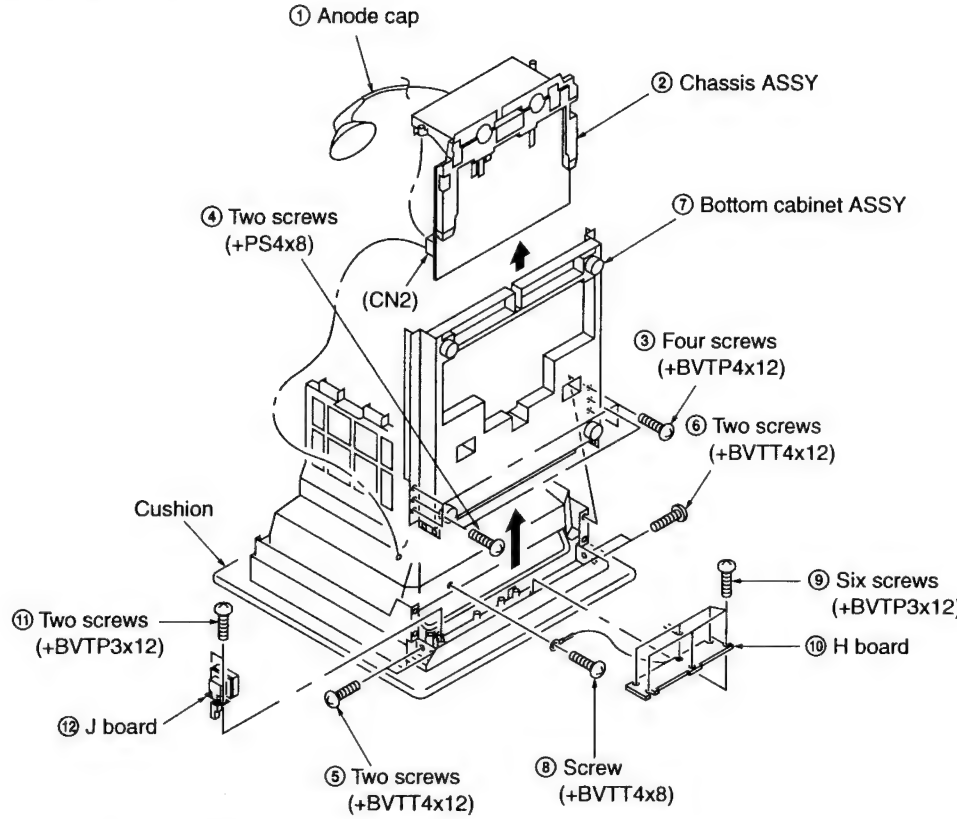
2-2-5. C Board Removal



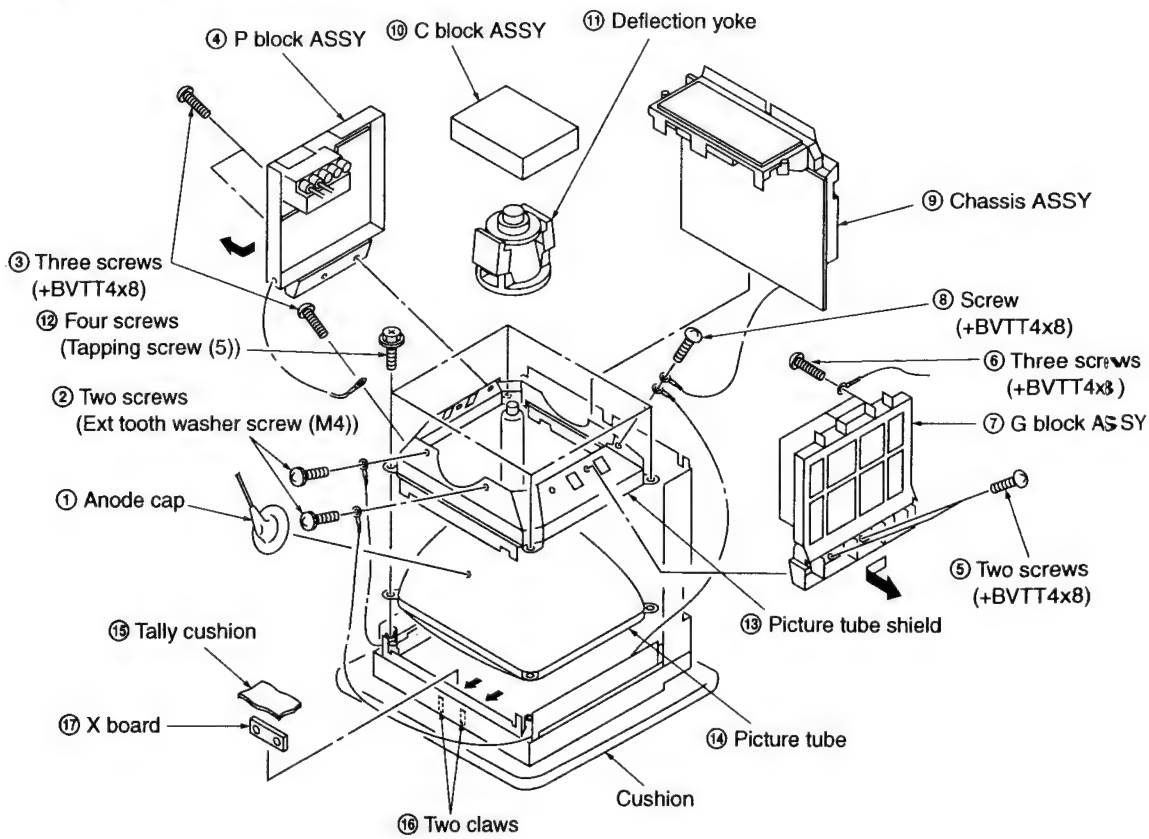
2-2-6. H and J Boards Removal (14inch)



2-2-7. H and J Boards Removal (20inch)

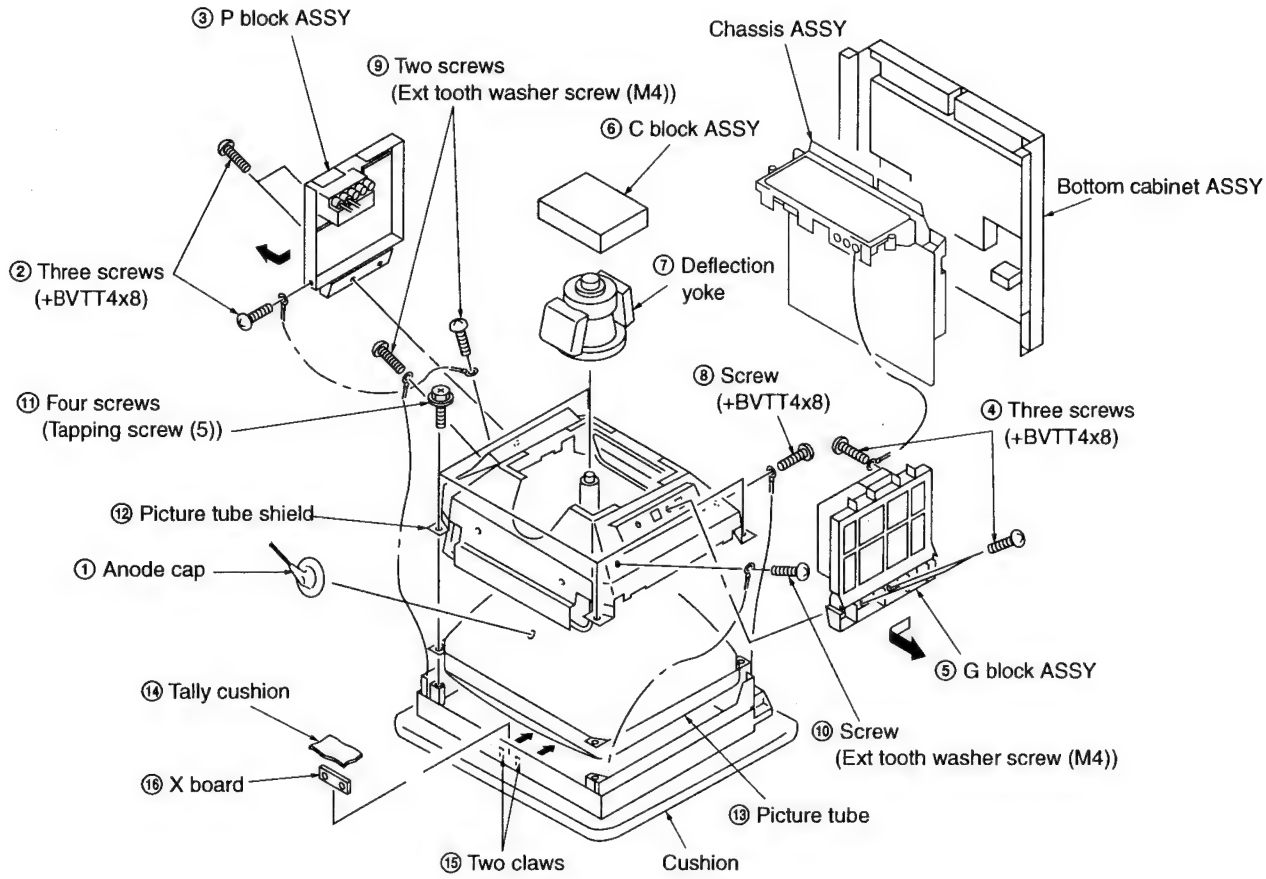


2-2-8. Picture Tube and X Board Removal (14inch)



2-2-9. Picture Tube and X Board Removal (20inch)

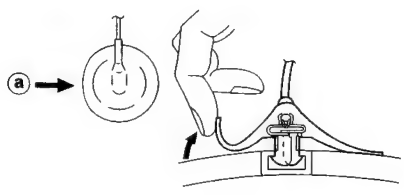
• Remove the chassis Assy and bottom cabinet Assy.



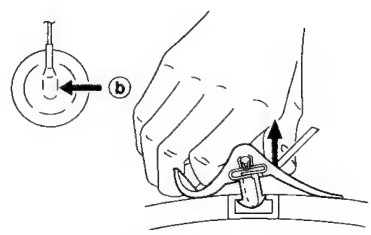
• REMOVAL OF ANODE-CAP

NOTE: Short circuit the anode of the picture tube and the anode cap to the metal chassis, picture tube shield or carbon painted on the picture tube, after removing the anode.

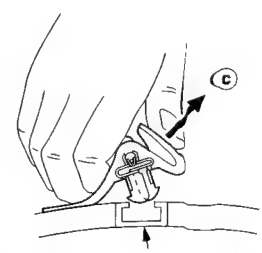
• REMOVING PROCEDURES



1. Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



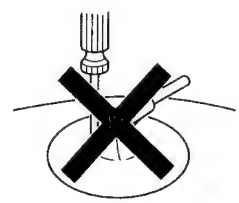
2. Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.

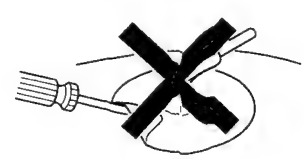


3. When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

• HOW TO HANDLE AN ANODE-CAP

1. Don't hurt the surface of anode-caps with sharp shaped material!
2. Don't press the rubber hardly not to hurt inside of anode-caps!
   A material fitting called as shatter-hook terminal is built in the rubber.
3. Don't turn the foot of rubber over hardly!
   The shatter-hook terminal will stick out or hurt the rubber.





SECTION 3
SET-UP ADJUSTMENTS

3-1. PREPARATIONS (1)

3-1-1. Service Mode

In this unit, various adjustments can be performed using the control switches on the front panel for servicing.
Perform the service mode as follows.

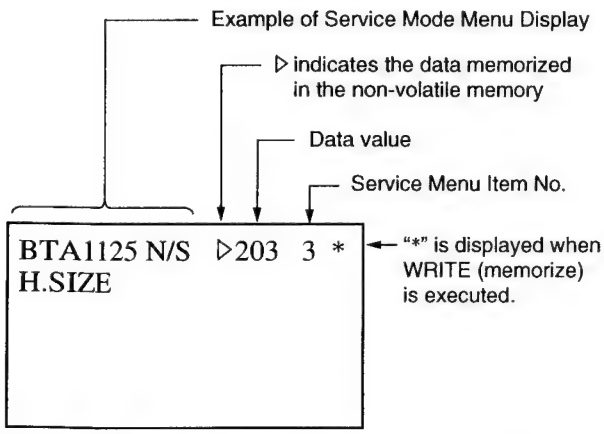
1. Entering the Service Mode

Turn On the power and press the MENU key to display the menu.
With the menu displayed, press the ENTER key while pressing the DEGAUSS key to enter the service mode.

2. Using the Service Mode Menu

MENU key:Reverses the menu
ENTER key:Forwards the menu
↑/+ key:Increases the data value
↓/– key:Decreases the data value

Example of Service Mode Menu Display



3. Writing (Memorizing) the Adjustment Data

When the DEGAUSS key is pressed, "WRITE" will be displayed.
When released and pressed another time, * will be displayed, indicating that the data has been memorized.

4. Exiting the Service Mode

While pressing the DEGAUSS key, press the ENTER key to exit the service mode.

5. FACTORY SET Mode (Values set at shipment)

"FACTORY SET" will be displayed when the DEGAUSS key is pressed for two seconds. It will executed when the DEGAUSS key is released and pressed again.

Note: When FACTORY SET is executed, the service item No. 199 FACTORY FLAG will become "0" (DONE). FACTORY SET can only be executed once. It need not be executed during servicing.

6. Service Remote

All the data of the service mode except FACTORY FLAG can be written and read using a tool.

Note: When FACTORY FLAG is "0" (DONE), the service mode cannot be set by the service remote.

3-1-2. Self-Diagnosis Functions

Malfunctions can be determined by the blinking of the REMOTE LED in this unit,

Main Reasons for Blinking of Remote LED

Once: ..... H OUT has stopped
Twice: ..... V OUT has stopped (Or no high voltage is output)
3 times: ..... HV PROTECTOR has operated
4 times: ..... IK PROTECTOR has operated
Or
+B overcurrent for HV OUT
5 times: ..... FAN has stopped or FAN has stopped due to stopping of HV. OUT circuit
6 times: ..... FC bus communication error
(Non-volatile memory error)
7 times: ..... Other errors

* The POWER LED does not light up or is dark.
Main Cause ..... 12V (from G board) fault
Main fuse disconnection 12V overload

* The REMOTE LED does not light when set to the REMOTE MODE.
Cause ..... 5V (digital) fault

* No images are displayed
The microprocessor has not been connected.
G2 is not set, etc.

Note: Defects of the high voltage circuit causes stopping of V.OUT. Check the operations of the high voltage circuit by checking if the heater turns on when V OUT is stopped to determine the faulty location.

ITEM No.	MODE	SIZE	SCAN	ITEM NAME	16 HEXADICIMAL
1	G2			G2	0x00
2	BTA 1125	16:9	NORMAL	H.OSC	0x01
3				H.SIZE	0x02
4				H.CENTER	0x03
5				H.PHASE	0x04
6				H.KEY	0x05
7				H.KEY.BAL	0x06
8				H.PIN	0x07
9				H.PIN.BAL	0x08
10				V.SIZE	0x09
11				NO USE	0x0a
12				V.PHASE	0x0b
13				V.LIN.BAL(16:9)	0x0c
14				V.LIN(16:9)	0x0d
15				H.BLK	0x0e
16				V.BLKT	0x0f
17				V.BLKB	0x10
18			UNDER	H.SIZE	0x11
19				H.KEY	0x12
20				H.KEY.BAL	0x13
21				H.PIN	0x14
22				H.PIN.BAL	0x15
23				V.SIZE	0x16
24				V.CENTER	0x17
25				V.BLKT	0x18
26				V.BLKB	0x19
27	DXC-9000	4:3		V.LIN.BAL(4:3)	0x1a
28				V.LIN(4:3)	0x1b
29	BTA 1125	16:9		4:3 MARKER LEFT	0x1c
30				4:3 MARKER RIGHT	0x1d
31	ATV 1080	16:9	NORMAL	V.CENTER	0x1e
32				H.PIN	0x1f
33				V.PHASE	0x20
34				V.BLKT	0x21
35				V.BLKB	0x22
36			UNDER	V.SIZE	0x23
37				H.PIN	0x24
38				V.BLKB	0x25
39	EDTV2	16:9	NORMAL	H.OSC	0x26
40				H.SIZE	0x27
41				H.CENTER	0x28
42				H.PHASE	0x29
43				H.KEY	0x2a
44				H.KEY.BAL	0x2b
45				H.PIN	0x2c
46				H.PIN.BAL	0x2d
47				V.SIZE	0x2e
48				V.CENTER	0x2f
49				V.PHASE	0x30
50				H.BLK	0x31
51				V.BLKT	0x32
52				V.BLKB	0x33

ITEM No.	MODE	SIZE	SCAN	ITEM NAME	16 HEXADICIMAL
53	ED TV2	16:9	UNDER	H.SIZE	0x34
54				H.KEY	0x35
55				H.KEY.BAL	0x36
56				H.PIN	0x37
57				H.PIN.BAL	0x38
58				V.SIZE	0x39
59				NO USE	0x3a
60				V.BLKT	0x3b
61				V.BLKB	0x3c
62	DXC-9000	4:3	NORMAL	H.SIZE	0x3d
63				H.CENTER	0x3e
64				H.PHASE	0x3f
65				H.KEY	0x40
66				H.KEY.BAL	0x41
67				H.PIN	0x42
68				H.PIN.BAL	0x43
69				V.SIZE	0x44
70				V.CENTER	0x45
71				V.PHASE	0x46
72				H.BLK	0x47
73				V.BLKT	0x48
74				V.BLKB	0x49
75			UNDER	H.SIZE	0x4a
76				H.KEY	0x4b
77				H.KEY.BAL	0x4c
78				H.PIN	0x4d
79				H.PIN.BAL	0x4e
80				V.SIZE	0x4f
81				NO USE	0x50
82				V.BLKT	0x51
83				V.BLKB	0x52
84			HD/VD	H.PHASE	0x53
85				V.PHASE	0x54
86	1250	16:9	NORMAL	H.SIZE	0x55
87				H.CENTER	0x56
88				H.PHASE	0x57
89				H.KEY	0x58
90				H.KEY.BAL	0x59
91				H.PIN	0x5a
92				H.PIN.BAL	0x5b
93				V.SIZE	0x5c
94				V.CENTER	0x5d
95				V.PHASE	0x5e
96				H.BLK	0x5f
97				V.BLKT	0x60
98				V.BLKB	0x61
99			UNDER	H.SIZE	0x62
100				H.KEY	0x63
101				H.KEY.BAL	0x64
102				H.PIN	0x65
103				H.PIN.BAL	0x66
104				V.SIZE	0x67

ITEM No.	MODE	SIZE	SCAN	ITEM NAME	16 HEXADICIMAL
105	1250	16:9	UNDER	NO USE	0x68
106				V.BLKT	0x69
107				V.BLKB	0x6a
108	625PR	4:3	NORMAL	H.SIZE	0x6b
109				H.CENTER	0x6c
110				H.PHASE	0x6d
111				H.KEY	0x6e
112				H.KEY.BAL	0x6f
113				H.PIN	0x70
114				H.PIN.BAL	0x71
115				V.SIZE	0x72
116				V.CENTER	0x73
117				V.PHASE	0x74
118				H.BLK	0x75
119				V.BLKT	0x76
120				V.BLKB	0x77
121			UNDER	H.SIZE	0x78
122				H.KEY	0x79
123				H.KEY.BAL	0x7a
124				H.PIN	0x7b
125				H.PIN.BAL	0x7c
126				V.SIZE	0x7d
127				NO USE	0x7e
128				V.BLKT	0x7f
129				V.BLKB	0x80
130	FREE	4:3	NORMAL	H.PHASE	0x81
131	(NO			V.SIZE	0x82
132	SYNC)			V.CENTER	0x83
133				V.PHASE	0x84
134			UNDER	V.SIZE	0x85
135		16:9	NORMAL	V.SIZE	0x86
136			UNDER	V.SIZE	0x87
137	MULTI			H.OSC	0x88
138				H.SIZE	0x89
139				H.CENTER	0x8a
140				H.PHASE	0x8b
141				H.KEY	0x8c
142				H.KEY.BAL	0x8d
143				H.PIN	0x8e
144				H.PIN.BAL	0x8f
145				V.SIZE	0x90
146				V.CENTER	0x91
147				V.PHASE	0x92
148				V.LIN.BAL	0x93
149				V.LIN	0x94
150				H.BLK	0x95
151				V.BLKT	0x96
152				V.BLKB	0x97
153	VIDEO			W/B DA CHROMA	0x98
154	DA2			Y.DA2	0x99
155				W/B DA GREEN	0x9a
156	MATRIX BTA			MDA1	0x9b

ITEM No.	MODE	SIZE	SCAN	ITEM NAME	16 HEXADICIMAL
157	MATRIX			MDA2	0x9c
158	BTA			MDA3	0x9d
159				MDA4	0x9e
160	MATRIX			MDA1	0x9f
161	CCIR			MDA2	0xa0
162				MDA3	0xa1
163				MDA4	0xa2
164	MATRIX			MDA1	0xa3
165	N10			MDA2	0xa4
166				MDA3	0xa5
167				MDA4	0xa6
168	COLOR		6500K	R.B	0xa7
169	TEMP			G.B	0xa8
170				B.B	0xa9
171				R.G	0xaa
172				G.G	0xab
173				B.G	0xac
174	COLOR		9300K	R.B	0xad
175	TEMP			G.B	0xae
176				B.B	0xaf
177				R.G	0xb0
178				G.G	0xb1
179				B.G	0xb2
180	BRIGHT			SUB.BRIGHT	0xb3
181	CON-	4:3	NORMAL	SUB.CONTRAST	0xb4
182	TRAST		UNDER	SUB.CONTRAST	0xb5
183		16:9	NORMAL	SUB.CONTRAST	0xb6
184			UNDER	SUB.CONTRAST	0xb7
185	REFER-			OSD.DA	0xb8
186	ENCE			PROT.DA	0xb9
187				REF.DA	0xba
188	SERVICE			LINE SELECT	0xbb
189	COM-			SCAN U/S SELECT	0xbc
190	MAND			GBR / Y Pb Pr	0xbd
191				SYNC SELECT	0xbe
192				COLOR TEMP	0xbf
193				SERIAL REMOTE	0xc0
194				16 : 9 SELECT	0xc1
195				LANGUAGE	0xc2
196				1080 SELECT	0xc3
197				SYSTEM DISPLAY	0xc4
198				AGING MODE	0xc5
199				FACTORY FLAG	0xc6
200				SERV OSD ON /OFF	0xc7
201				SERVICE FLAG	0xc8
202				NO USE	0xc9
203				USERDATA CLEAR	0xca
204				DEGAUSS ON	0xcb
205				WRITE	0xcc
206				READ	0xcd
207				FACTORY PRESET	0xce
208				P.SAVING ON	0xcf

ITEM No.	MODE	SIZE	SCAN	ITEM NAME	16 HEXADICIMAL
209				ALL OSD DISPLAY	0xd0
210				SYNC SAMPLE P	0xd1
211				H / V DELAY	0xd2
212				4 : 3 MARKER SET	0xd3
213				TALLY	0xd4
214				1080 V SIZE SET	0xd5
215				SPECIAL MATRIX	0xd6
216				SDI EXIT	0xd7
217				SDI JUDUE MANUAL	0xd8
218				W-DA CHROMA SDI	0xc9
219				W-DA GREEN SDI	0xca

3-2. PREPARATIONS (2)

3-2-1. Equipment Used

1. Signal generator

High vision :BTA S-001A (SMPTE 240M) specifications
(Example of signal generator-Leader Electronic 440)
:SMPTE 274M specifications

VG-814 :BTA1004 specifications
(Note:ROM is required)
(SMPTE 293M)
:CCIR Rec-709 specifications
(Note:ROM is required)
:DXC-9000 VGA specifications
(Note:ROM is required)

HD SDI :(SMPTE 240M/274M)
(Example of signal generator-Shibasoku TG15B6)

2. Demagnetizer
3. Oscilloscope
4. Digital voltmeter

3-2-2. Adjustment Conditions

Note 1: When the CRT has been replaced, connect a DY to it, and determine the neck assembly position before performing adjustments.

2: The service mode will be exited when the power is turned off.
When turning ON the power again, perform service item No. 207 FACTORY PRESET, set service item No. 199 FACTORY FLAG to 1, and write the data (memorizing).

3: Make sure that LANDING is set to STD.
(For 20inch, STD is set by setting PRESET.)

4: The No. 00[ ] in the text indicates the service item No. and item name of the service menu.

5: Write the data (memorizing) each time after completing adjustments in the service mode. If the power is turned off without performing "WRITE" (memorize), all data will be lost. (Indicated as "WRITE" in this document.)

6: If the system and SCAN are the same, the data will be preserved on the RAM.

7: The U/S and N/S in the text indicate the under scan and normal scan.

1. Settings

Set as follows unless where specified otherwise.

APERTURE :MIN
BRIGHT :50% (Center click)
CHROMA :50% (Center click)
CONTRAST :80% (Center click)
VOLUME :25% (Set to the 9 o'clock position)
4:3 :N/S (Normal scan)

2. Setting the AC Voltage

120 ± 3V
Sliduck or NF power supply
Below 3% distortion rate, above 2.0A capacity

3. Signals Used

Signal		Details of Signal	Specification Level p-w
Compo-nent	HD EDTV2 CCIR 274M	100% white (Y)	0.700 [V]
		75% white (Y)	0.525 [V]
		100% color (Pb, Pr) This item is peak-peak	0.700 [Vpp]
		75% color (Pb, Pr) This item is peak-peak	0.525 [Vpp]
R G B	HD EDTV2 CCIR 274M	100% white (R, G, B)	0.700 [V]
		75% white (R, G, B)	0.525 [V]

Signal Names

HD :BTA S-001A (SMPTE 240M) specifications
(1125/59-94, 60 Hz-2 :1)
:SMPTE 274M specifications

EDTV2 :BTA T-1004 specifications (SMPTE 293M)
(525/59-94 Hz 1: 1)

CCIR :Rec-709 specifications
(1250/50 Hz 2:1)

Matrix Ratio

HD :BTA S-001A specifications
Y=0.212R+0.701G+0.087B

EDTV2 :BTA T-1004 specifications (SMPTE 293M)
Y=0.299R+0.587G+0.114B

CCIR /274M :Rec-709 specifications
Y=0.213R+0.715G+0.072B

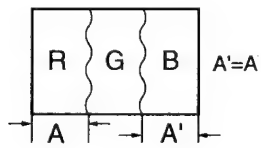
3-3. LANDING ADJUSTMENTS

3-3-1. Landing Rough Adjustment

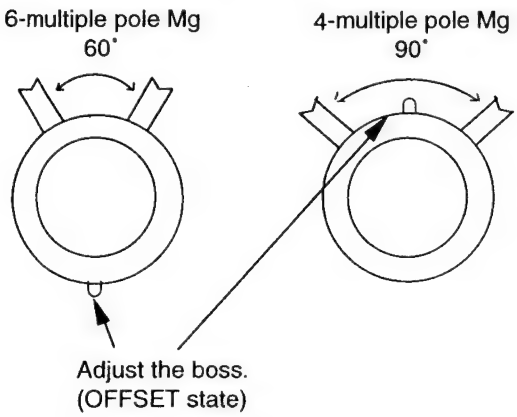
1. To decrease the effects of earth magnetism, face the CRT of the unit towards the east or west.
2. Set CONTRAST to MAX.
   BRIGHT:Set so that the screen can be clearly seen.
3. Input the DXC-9000 green signal to receive images.
4. Loosen the DY tightening fixture and move back the DY.
5. Turn ON the power supply to demagnetize.

Note: If AC is 60 Hz, set the unit to free-running and demagnetize.

6. Adjust the purity Mg so that the green raster comes to the center of the screen. Equalize R and B.



Note: Set the 6-multiple pole and 4-multiple pole Mg (14inch) of the DY and 6-multiple pole Mg of the neck assembly to offset.

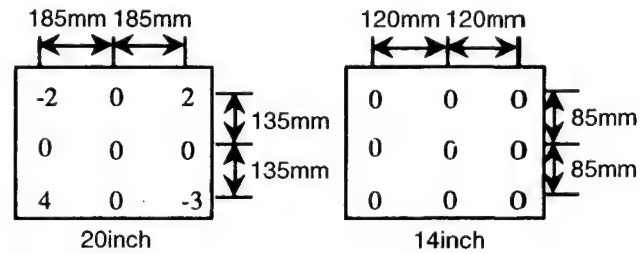


7. Move the DY forward gradually, and adjust so that the whole screen becomes green.
8. Check the B and R signals also. Perform step 7 again if the screen is not in green alone.
9. Adjust the tilt of the DY.
10. Tighten the DY tightening fixture lightly.
11. Return CONTRAST and BRIGHT to the center click.

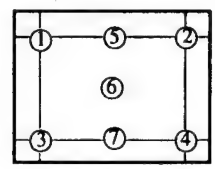
3-3-2. Landing Fine Adjustment

1. Adjust landing to 120 nit using the DXC-9000 all white signal and 4:3 N/S 104% overscanning, and then cool down.
2. Perform aging of the unit for about 30 minutes.
3. Input the DXC-9000 green signal to receive images, and set CONTRAST to MAX.
4. Demagnetize the whole unit and then the CRT screen.
5. Attach the wobbling coil to the CRT neck assembly.
   (Polarity at which the temperature drift at the top left becomes negative with time.)
6. Adjust the DY position, purity, DY tilt center, and landing at the four corners using the landing checker.

Adjust the L/D adjustment value 30 minutes after the power is turned ON as follows. (Target)



<Specification>

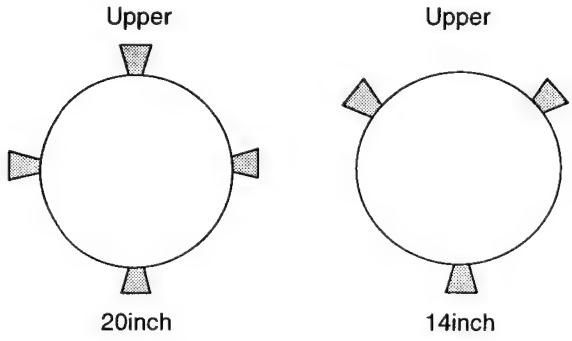


Note :
Adjust so that the aging time become 30 minutes exactly. (Do not adjust more than 1 hour.)

Adjust the green of each corner, ① to ④, and center ⑥ to ±5 mm, set the red and blue to less than ±7 mm of green, and the difference between red and blue to less than ±10 mm.
For ⑤ and ⑦, adjust green to less than ±10 mm, red and blue to less than ±7 mm of green, and the difference between red and blue to less than ±10 mm.

7. Tighten the DY tightening fixture temporarily.

8. For vertical and horizontal swivels, rotate the DY neck and insert a wedge so that the left and right sides of the horizontal trapezoid of the upper and lower pins become equivalent.
   Be sure to insert the wedge properly so that the DY does not shake.



9. Check the landing at each corner, and if it does not meet the specifications, paste a disk magnet to the funnel and adjust.

Note 1:Paste the disk magnet about 80 to 100 mm from DY diagonally.
2: When using a disk magnet, perform degaussing and check the landing.
Use less than 4 disk magnets, one for each corner.

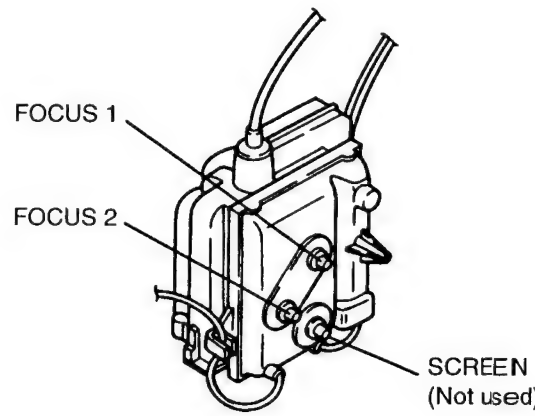
10. Remove the wobbling coil.

11. Check that the color purity is good for each color R, G, and B.

12. Check that there is no DY tilt, tighten the DY tightening tool completely, and fix the purity MG using a white adhesive.

3-4. FOCUS ADJUSTMENT

1. Input the HD monoscope signal N/S to receive images.
2. Set CONTRAST:MAX and BRIGHT to the center click.
3. Focus the vertical line exactly using V FOCUS (FBT (T3003) FOCUS 1, upper side on board A).
4. Focus the horizontal line exactly using H FOCUS (FBT (T3003) FOCUS 2, lower side on board A).
5. Perform tracking of the 14inch, and adjust the focus of the whole screen to optimum.



6. Perform tracking so that the shape of the "0" of the "400" and "1200" numbers become optimum.
7. Display the menu, and check that the focus is optimum on the menu (high contrast signal).

8. Input the DXC-9000 4:3 N/S cross-hatch signal and receive images.
   If the horizontal lines at the top and bottom of the screen appear distorted, rotate the FOCUS in the clockwise direction slowly to reduce the distortion.

Note: Be careful not to reduce the distortion excessivelyas this will aggravate the focus at the center.

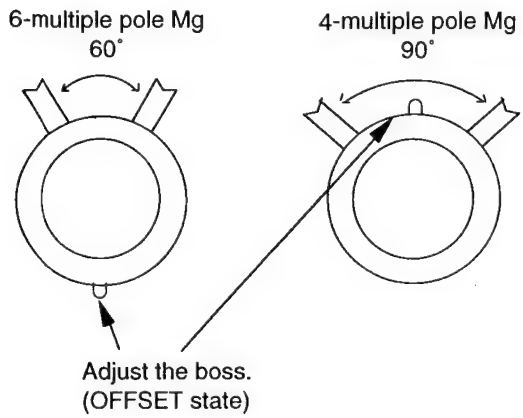
9. Check that the focus is satisfactory at the "400" and "1200" numbers, center and menu character.
   If bad, return to step 8 and check again.

10. Return CONTRAST to center click.

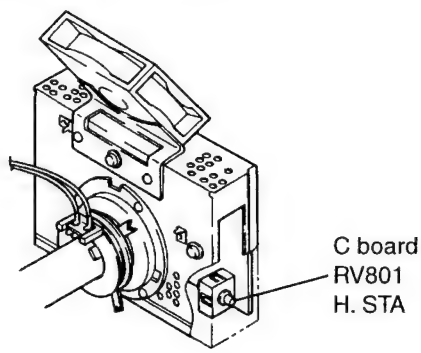
3-5. CONVERGENCE ADJUSTMENT

3-5-1. Convergence Rough Adjustment

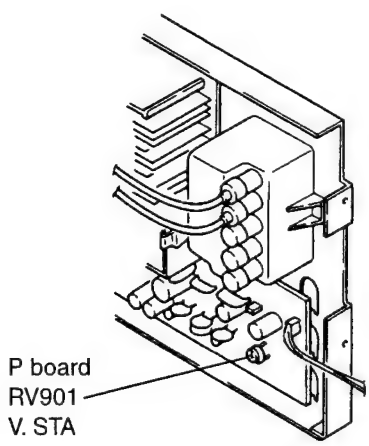
1. Input the DXC-9000 dot signal to receive images.
2. Adjust CONTRAST to a level at which the screen is the clearest. Set BRIGHT to MIN.
3. Overlap the 6-multiple pole Mg bosses of the CRT neck assembly. (14inch, 20inch)
   Adjust the 6-multiple pole Mg and 4-multiple pole Mg bosses of the DY. (14inch)



4. Adjust the convergence in the H direction roughly using H.STAT. (RV801 of C board)

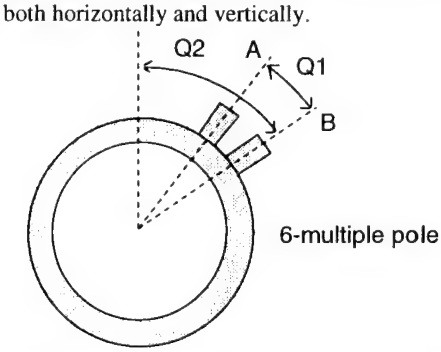


5. Adjust the convergence in the V direction roughly using V.STAT. (RV901 of P board)



3-5-2. Convergence Rough Adjustment (20inch)

1. Demagnetize the whole unit using a demagnetizer.
2. Input the DXC-9000 cross-hatch signal to receive images.
3. Set the 4:3 mode, and return BRIGHT and CONTRAST to the center click.
4. Rotate H.STAT (RV801 of C board) and V.STAT (RV901 of P board) to make all three lines R, G, and B parallel.
5. Rotate the 6-pole Mg of the neck assembly and adjust so that the distance between R and G and that between B and G become equal both horizontally and vertically.



Correct the static convergence by changing the angle Q1 between the two knobs A and B and the tilt Q2.

6. Return H.STAT and V.STAT to their original settings, and set the misconvergence at the center of the screen to zero.
7. Adjust TLV.
8. Rotate the XBV reactor and adjust the XBV misconvergence to zero.
   Rotate the XCV reactor and adjust the XCV misconvergence.

Note: If the XBV has been corrected, adjust V.STAT again.
If the XCV cannot be adjusted any further, move the DY up and down to adjust XCV.

9. Rotate the APH reactor and adjust the H.AMP misconvergence.

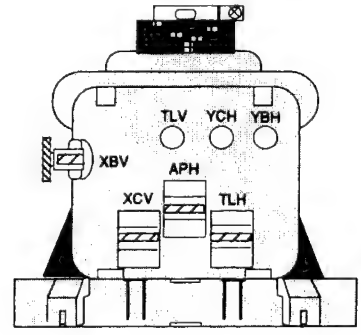
10. Rotate the TLH reactor and adjust the H.TILT misconvergence.

Note: If the TLH has been corrected, adjust H.STAT again.

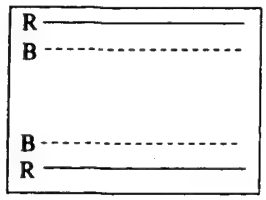
11. Adjust the YBH misconvergence using YBH.

12. Adjust the YCH misconvergence using YCH.

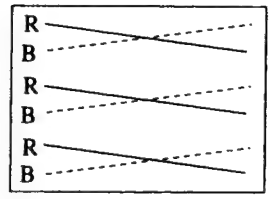
Note: If the horizontal trapezoid does not satisfy the specified value, perform tracking with the right and left swivels of the DY.



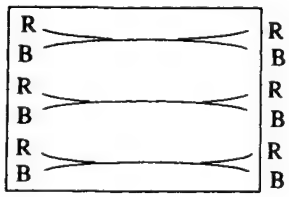
TLV •••• V. TILT



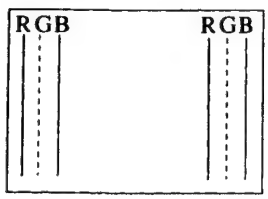
XCV •••• V. X. CROSS



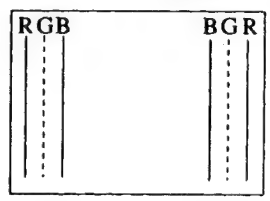
XBV •••• V. X. BOW



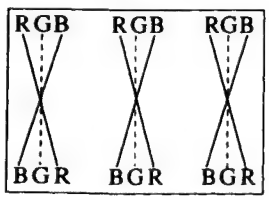
APH •••• H. AMP



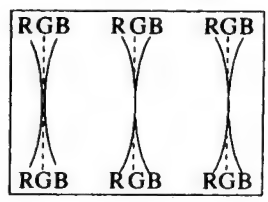
TLH •••• H. TILT



YCH •••• H. Y. CROSS

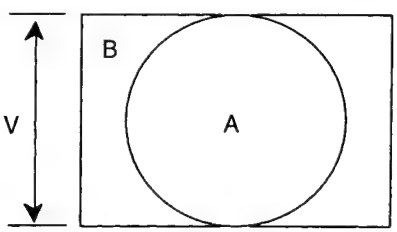


YBH •••• H. Y. BOW



13. Check the convergence of the overall screen, and if necessary, adjust H.STAT (RV801 of C board), perform other adjustments, and correct the permalloy.

Convergence Adjustment Specifications



A zone 0.40 mm
B zone 0.48 mm
(When no caviation)

14. Check the convergence of the overall screen, and check that the reverse hatch is not affected by the luminance.
15. Fix XBV, XCV, APH, TLH, and two 6-pole Mg using white adhesive.
16. Fix the DY spacer and permalloy assembly using RTV.

Note: Make sure that the white adhesive sufficiently covers the DY, DY spacer, and funnel.

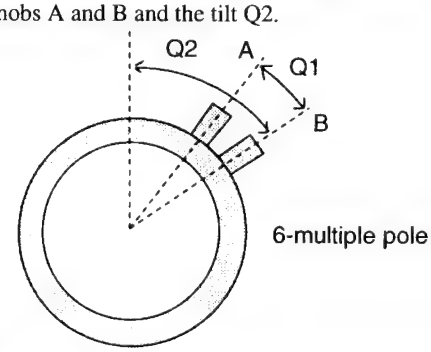
17. Fix V.STAT (RV901 of P board) using white adhesive.

Note: Apply a small amount of white adhesive on the outside so that it does not go inside the control.

3-5-3. Convergence Fine Adjustment (14inch)

1. Demagnetize the whole unit using a demagnetizer.
2. Input the DXC-9000 cross-hatch signal to receives images.
3. Set the 4:3 mode, and return CONTRAST and BRIGHT settings to the center click.
4. Rotate H.STAT (RV801 of C board) and V.STAT (RV901 of P board) to make all three lines R, G, and B parallel.
5. Rotate the 6-pole Mg of the neck assembly and adjust so that the distance between R and G and that between B and G become equal both horizontally and vertically.

Correct the static convergence by changing the angle Q1 between the two knobs A and B and the tilt Q2.



Note: Set the 4-pole and 6-pole of the DY to offset and do not touch them thereafter. (Do not use them thereafter).

6. Return H.STAT and V.STAT to their original settings, and set the misconvergence at the center of the screen to zero.

7. Adjust TLV.

Note: If the horizontal trapezoid does not satisfy the specified value, perform "Landing Adjustments" again.

8. Adjust TH (XCV).

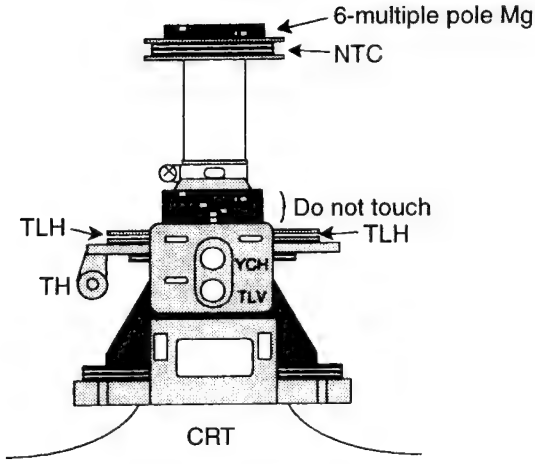
Note: If the XCV cannot be adjusted any further, perform "Landing Fine Adjustment" again and move the DY up and down.

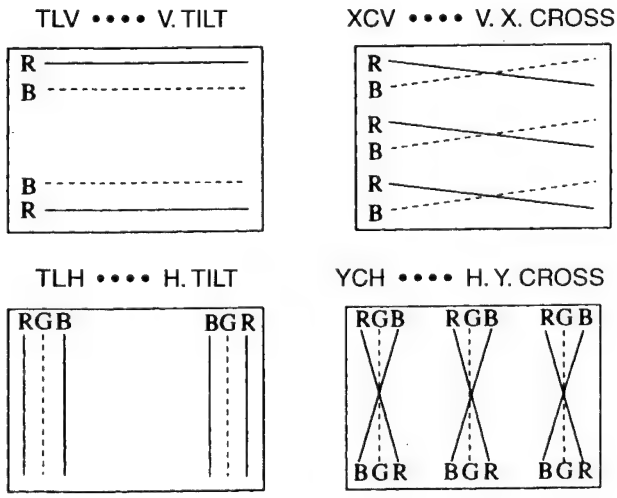
9. If the H.TILT is misconverged, insert the TLH correction plate into DY and adjust the insertion amount.
   Perform this for the left and right sides separately, and check that the H.TILT is not affected.

Note: If the TLH correction plate was inserted into the DY, adjust H.STAT again.

10. Adjust the YCH misconvergence using YCH.

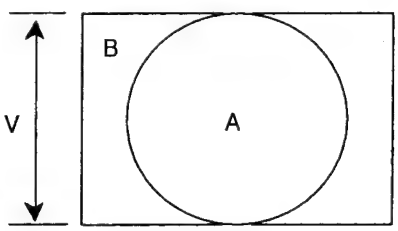
Note: If the horizontal trapezoid does not satisfy the specified value, perform tracking with the right and left swivels of the DY.





11. Check the convergence of the overall screen, and if necessary, adjust H.STAT (RV801 of C board), perform other adjustments, and correct the permalloy.

Convergence Adjustment Specifications



A zone 0.32 mm
B zone 0.40 mm
(When no caviation)

12. Check the convergence of the overall screen, and check that the reverse hatch is not affected by the luminance.
13. If a TLH correction plate is inserted, fix using a white adhesive.
14. Fix the DY spacer and permalloy assembly using RTV.

Note: Make sure that the white adhesive sufficiently covers the DY, DY spacer, and funnel.

15. Fix the 6-pole Mg of the neck assembly and 6-pole Mg of the DY using white adhesive.

16. Fix V.STAT (RV901 of P board) using a white adhesive.

Note: Apply a small amount of white adhesive on the outside so that it does not go inside the control.

3-6. IMAGE DISTORTION ADJUSTMENTS

When carrying out preparations, replacing the CRT, and adjust the image distortion, in order to release the blanking, set all the H.BLK and V.BLKB to 00 in the service mode, and perform adjustments after setting V.BLKT to 255.

3-6-1. Image Distortion Rough Adjustment

1. Input the HD cross-hatch signal to receive images.
2. Set No. 196 [1080 SELECT] to "0" and set the 1035 mode in the N/S, and set the service mode.
3. Adjust the image distortion roughly in the following conditions.
   - No. 3 [H SIZE]
   - No. 4 [H.CENTER]
   - No. 10 [V.SIZE]
   - No. 8 [H.PIN]
   - No. 6 [H.KEY]

Specifications for BTA1125 N/S mode
Horizontal:18.7 ± 0.2 frames
Vertical:10.5 ± 0.2 frames
However, for a hatch of 20 horizontal blocks and 11.25 vertical blocks:

(V.SIZE specifications when no 16:9 mask)
20inch:235 mm
14inch:161 mm

4. Write the data.
5. Exit the service mode.
6. Input the DXC-9000 cross-hatch signal to receive images.
7. Set No. 194 [16:9 SELECT] to "0" and set the 4:3 mode in the N/S, and set the service mode.
8. Adjust the image distortion roughly in the following conditions.
   - No. 62 [H SIZE]
   - No. 63 [H.CENTER]
   - No. 69 [V.SIZE]
   - No. 67 [H.PIN]
   - No. 65 [H.KEY]

Specifications for DXC-9000 4:3, N/S mode
Horizontal:(15.7 ± 0.2 frames)
Vertical:(10.4 ± 0.2 frames)

Note ( ) indicates values when VG-814 hatch is used

9. Write the data.

3-6-2. Image Distortion Fine Adjustment

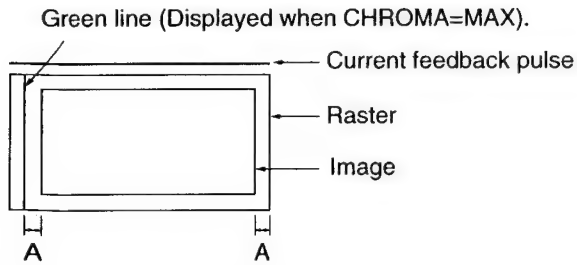
Note 1: Perform the adjustments after power conduction for more than 5 minutes.
Note 2: Demagnetize the whole unit using a demagnetizer

(1) HD 1080 U/S adjustment

1. Input the HD cross-hatch signal to receive images.
2. Set the U/S mode, set CONTRAST to MIN and BRIGHT to MAX, and light up the raster.
3. Set No. 196 [1080 SELECT] to "1", and set the 1080 mode.
4. Set the service mode.
5. Adjust to satisfy the specifications in the following conditions.
   - No. 5 [H. PHASE]
   - No. 33 [ATV 1080 N/S V. PHASE]
   - No. 18 [H. SIZE]
   - No. 19 [H. KEY]
   - No. 20 [H. KEY. BAL]
   - No. 37 [ATV 1080 U/S H. PIN]
   - No. 22 [H. PIN. BAL]
   - No. 36 [ATV 1080 U/S V.SIZE]

* Adjust H.PHASE so that the left and right raster of the image becomes equivalent.
To adjust H.PHASE, set the YPBPR mode (absolute), set CHROMA to MAX, adjust the green line on the left edge so that it becomes clear, and adjust so that A (width of green line and left edge of screen) becomes equal to A (width of right edge of raster and right edge of image).

* To adjust V. PHASE, decrease the data by 5 after the topmost line of the image becomes visible and write the data. The data should not be less than 110.



Specifications for HD 1080 U/S mode

20inch	:H.SIZE	369 ± 2 mm
	:V.SIZE	208 ± 2 mm
14inch	:H.SIZE	254 ± 2 mm
	:V.SIZE	143 ± 2 mm

Note 1: KEY and PIN can be adjusted more quickly if adjusted after H.SIZE and V.SIZE.
(For whole system)
Note 2: Adjust in the order of U/S and N/S for all the modes.
As blanking is imposed in N/S, the H.PHASE and V.PHASE cannot be adjusted if U/S is adjusted after N/S.

6. Write the data.

(2) HD 1080 N/S adjustment

1. Input the HD cross-hatch signal to receive images.
2. Set the N/S mode.
3. Set CONTRAST to MAX, and BRIGHT to MIN, and light up the black level.
4. Adjust to satisfy the specifications in the following conditions.
   - No. 3 [H.SIZE]
   - No. 4 [H.CENTER]
   - No. 6 [H.KEY]
   - No. 7 [H.KEY.BAL]
   - No. 34 [ATV 1080 N/S H. PIN]
   - No. 9 [H.PIN.BAL]
   - No. 32 [ATV 1080 N/S V.SIZE]
   - No. 31 [ATV 1080 N/S V.CENTER]
   - No. 13 [V.LIN.BAL (16:9)]
   - No. 14 [V.LIN (16:9)]

Specifications for HD 1080 N/S mode

20inch	H.SIZE.... 18.7 ± 0.2 frames
	V.SIZE.... 10.9 ± 0.2 frames
	(235 ± 2 mm when no 16:9 bezel)
14inch	H.SIZE.... 18.7 ± 0.2 frames
	V.SIZE.... 10.9 ± 0.2 frames
	(161 ± 2 mm when no 16:9 bezel)

Note 1: Adjust V.LIN.BAL and V.LIN by tracking.
Note 2: Do not move H.PHASE and V.PHASE after adjusting using U/S.
Adjust the balance of the left and right sides of the screen using H.CENTER and the balance of the top and bottom of the screen using V.CENTER.

5. Write the data.
6. Adjust No. 13 [V.LIN.BAL (16:9)] so that the height at the top half and bottom half of the screen becomes equal.

   Decrease V.SIZE if necessary.
   If the top is longer:Press the ↓/– key.
   If the bottom is longer:Press the ↑/+ key.

7. Adjust No.14 [V.LIN. (16:9)] so that the height of one frame in the vertical direction at the top and that of one frame in the vertical direction at the center become equal.

   If the frame at the center is small:Press the ↑/+ key.
   If the frame at the center is large:Press the ↓/– key.

8. Write the data.

(3) HD 1080 blanking adjustment

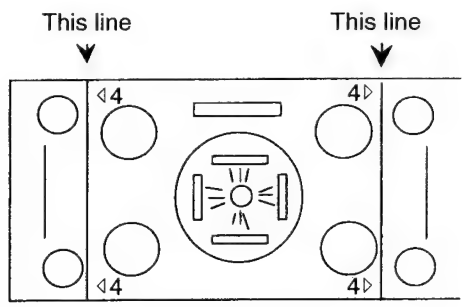
1. Input the HD cross-hatch signal N/S mode to receive images.
2. Remove the 16:9 mask, adjust No. 35 [V.BLKB] if the 3-value SYNC is visible at the bottom of the screen until it becomes hidden, and increase the data by 1 and write it.
3. Set the U/S mode. Adjust No. 38 [V.BLKB] until the 3-value SYNC at the bottom of the screen becomes hidden, and increase the data by 1 and write it.
4. Set the U/S mode to the YPB PR mode and CHROMA to MAX.
5. Adjust the blanking at the left side of the image using No. 15 [H.BLK].
   Add another 5 when the green line on the left side becomes hidden (Refer to 3-6-2. H.PHASE Adjustment.), and write the data.

Note: Take note that the green line must be hidden, but if blanking is imposed excessively, the left side may be chipped during the RGB mode.

6. Return CHROMA to the center click.

(4) HD 4:3 area marker adjustment

1. Input the HD monoscope signal to receive images.
   Display the 4:3 area marker in the U/S.
2. Adjust No. 29 [4:3 MARKER LEFT].
   Adjust so that the right side of the green line of the marker (left) touches the tip of the triangular mark at the number "4".
3. Adjust No. 30 [4:3 MARKER RIGHT].
   Adjust so that the left side of the green line of the marker (right) touches the tip of the triangular mark at the number "4".



4. Erase the 4:3 area marker.

(5) HD (1035) U/S adjustment (SMPTE 240M)

1. Set No. 196 [1080 SELECT] to "0", and set the 1035 mode.
2. Input the HD1035 cross-hatch signal to receive images.
3. Adjust No. 12 [V.PHASE] (BTA1125, 16:9 N/S), adjust so that the width of the raster extending to the edges of the top and bottom images become equal.
4. Set the U/S mode, adjust No. 23 [V.SIZE] and No. 21 [H.PIN], and write the data.

Specifications for BTA1125 16:9, U/S V.SIZE
20inch:208 ± 2 mm
14inch:143 ± 2 mm

(6) HD (1035) N/S adjustment

1. Set the N/S mode. Adjust No. 11 [V.CENTER], No. 10 [V.SIZE], No. 8 [H.PIN], and write the data.

Specifications for HD 1035 16:9, N/S V.SIZE
20inch : 10.5 ± 0.2 frames
(235 ± 2 mm when no 16:9 masking)
14inch : 10.5 ± 0.2 frames
(161 ± 2 mm when no 16:9 masking)

(7) HD (1035) blanking adjustment

1. Input the HD1035 monoscope signal to receive images.
2. Set the N/S mode.
3. Adjust the blanking at the top the screen using No. 16 [V.BLKT].
   Add 10 to the data in which blanking is hidden in the top side of 16:9 mask, and write the data.
4. Adjust the blanking at the bottom the screen using No. 17 [V.BLKB].
   Subtract 10 from the data in which blanking is hidden in the bottom side of 16:9 mask, and write the data.
5. Set the U/S mode.
6. Adjust No. 26 [V.BLKB], add +6 to the data at which the bottom 3-value SYNC becomes hidden, and write the data.

Note: Do not change V.PHASE after adjusting in the U/S mode. Adjust the balance at the top and bottom in the N/S mode using V.CENTER.

(8) CRT display adjustment

1. Input the high vision (1035) monoscope signal to receive images.
2. Set the N/S mode.
3. Set No. 209 [ALL OSD DISPLAY] to "1" to display OSD on the whole display.
4. Adjust No. 185 [OSD DA] (adjust the size of the characters so that all characters fit the screen, and there is space about the size of one character on the right side. If the value is 0 and the characters cannot be made any smaller, use 0 as the adjustment value), and write the data.

Note 1: As the hardware cannot catch up with the OSD, DA immediately, wait for some time after changing the data.

Note 2: Defects can be suspected if the characters cannot be made any smaller, and the second character from the right is chipped.

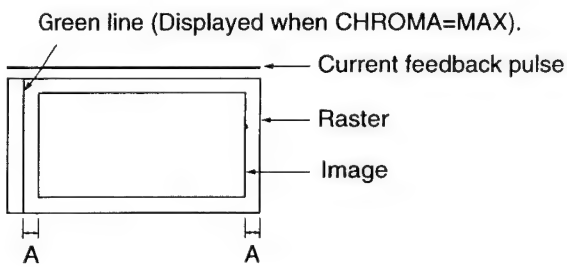
5. Set No. 209 [ALL OSD DISPLAY] to "0", write the data, and exit the service mode.

(9) EDTV2 (SMPTE 293M) U/S adjustment

1. Input the high vision monoscope signal to receive images.
2. Set to U/S, and set CONTRAST to MIN, and BRIGHT to MAX to light up the raster.
3. Set the 16:9/4:3 mode, 16;9 mode, and U/S mode.
4. Set the serviceman mode.
5. Adjust to satisfy the specifications in the following conditions.
   - No. 42 H.PHASE
   - No. 49 V.PHASE
   - No. 53 H.SIZE
   - No. 54 H.KEY
   - No. 55 H.KEY.BAL
   - No. 56 H.PIN
   - No. 57 H.PIN.BAL
   - No. 58 V.SIZE

* Adjust H.PHASE so that the left and right raster of the image becomes equivalent. To adjust H.PHASE, set the YPBPR mode (absolute), set CHROMA to MAX, adjust the green line on the left edge so that it becomes clear, and adjust so that A (width of green line and left edge of screen) becomes equal to A (width of right edge of raster and right edge of image).

* Adjust V.PHASE so that the left and right raster of the image becomes equivalent.



Specifications for high vision EDTV 2 16:9 U/S mode

20inch H.SIZE.... 369 ± 2 mm
V.SIZE.... 208 ± 2 mm
14inch H.SIZE.... 254 ± 2 mm
V.SIZE.... 143 ± 2 mm

Note 1: KEY and PIN can be adjusted more quickly if adjusted after H.SIZE and V.SIZE.
(For whole system)

Note 2: Adjust in the order of U/S and N/S for all the modes.
As blanking is imposed in N/S, the H.PHASE and V.PHASE cannot be adjusted if U/S is adjusted after N/S.

6. Write the data.

(10) EDTV2 (SMPTE 293M) N/S adjustment

1. Input the high vision cross-hatch signal to receive images.
2. Set the N/S mode.
3. Set CONTRAST to MAX, and BRIGHT to MIN, and light up the black level.
4. Adjust to satisfy the specifications in the following conditions.
   - No. 40 H.SIZE
   - No. 41 H.CENTER
   - No. 43 H.KEY
   - No. 44 H.KEY.BAL
   - No. 45 H.PIN
   - No. 46 H.PIN.BAL
   - No. 47 V.SIZE
   - No. 48 V.CENTER

Specifications for high vision EDTV2 16:9 N/S mode

20inch H.SIZE.... 18.7 ± 0.2 frames (15.7 ± 0.2)
V.SIZE.... 10.5 ± 0.2 frames
(235 ± 2 mm when no 16:9 mask)
14inch H.SIZE.... 18.7 ± 0.2 frames (15.7 ± 0.2)
V.SIZE.... 10.5 ± 0.2 frames
(161 ± 2 mm when no 16:9 mask)

Note 1: Adjust V.LIN.BAL and V.LIN by tracking.

Note 2: Do not move H.PHASE and V.PHASE after adjusting using U/S.
Adjust the balance of the left and right sides of the screen using H.CENTER and the balance of the top and bottom of the screen using V.CENTER.

5. Write the data.
6. Adjust No. 13 V.LIN.BAL (16:9) so that the height at the top half and bottom half of the screen becomes equal.

Note: Decrease V.SIZE if necessary.
If the top is longer:Press the ↓/– key.
If the bottom is longer:Press the ↑/+ key.

7. Adjust No. 14 V.LIN (16:9) so that the height of one frame in the vertical direction at the top and that of one frame in the vertical direction at the center become equal.
If the frame at the center is small:Press the ↑/+ key.
If the frame at the center is large:Press the ↓/– key.

8. Write the data.

(11) EDTV2 (SMPTE 293M) U/S blanking adjustment

1. Input the high vision monoscope signal to receive images.
2. Adjust the blanking at the top of the screen using No. 16 [V.BLK.T].
   Add 10 to the data in which blanking is hidden at the top of the 16:9 mask, and write the data.
3. Adjust the blanking at the bottom of the screen using No. 17 [V.BLK.B].
   Subtract 10 from the data in which blanking is hidden at the bottom of the 16:9 mask, and write the data.
4. Set to U/S.
5. Adjust the blanking at the left side of the image using No. 50 [EDTV2 N/S H.BLK].
   Scroll up the data and when the blanking comes to the left side of the image, scroll the data down until no blanking is imposed, subtract 20 from the data and write the data.
   If the left edge is not hidden, set the data to 255.
6. Adjust the blanking at the bottom of the screen with No. 51, 60 [V.BLK.T]=255 (fixed), No. 52, 61 [B.NLK.B].
   Adjust so that the bottom 3-value SYNC becomes hidden, add 5 to the hidden data, and write the data. (Clear the 16:9 mask first.)

(12) DXC-9000 U/S adjustment

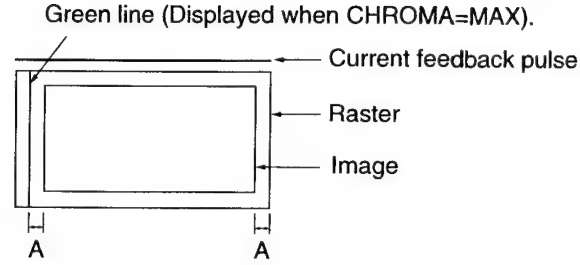
1. Input the high vision cross-hatch signal to receive images.
2. Set to U/S, and set CONTRAST to MIN and BRIGHT to MAX to light up the raster.
3. Set the 4:3 mode in the 16:9/4:3 menu.
4. Set the service mode. (Refer to 3-1-1. Service Mode.)
5. Adjust to satisfy the specifications in the following conditions.
   - No. 64 [H.PHASE]
   - No. 71 [V.PHASE]
   - No. 75 [H. SIZE]
   - No. 76 [H.KEY]
   - No. 77 [H.KEY.BAL]
   - No. 78 [H.PIN]
   - No. 79 [H. PIN.BAL]
   - No. 80 [V.SIZE]

Specifications for DXC-9000 4:3 U/S mode

20inch	H.SIZE	369 ± 2 mm
	V.SIZE	278 ± 2 mm
14inch	H.SIZE	254 ± 2 mm
	V.SIZE	190 ± 2 mm

* Adjust H.PHASE so that the raster at the left and right of the image becomes equal. To adjust H.PHASE, set the YPBPR mode (absolute), set CHROMA to MAX, adjust the green line on the left edge so that it becomes clear, and adjust so that A (width of green line and left edge of screen) becomes equal to A (width of right edge of raster and right edge of image).

* Adjust V.PHASE so that the left and right raster of the image becomes equivalent.



6. Write the data.

(13) DXC-9000 N/S adjustment

1. Input the high vision cross-hatch signal to receive images.
2. Set the N/S mode.
3. Set CONTRAST to MAX, and BRIGHT to MIN, and light up the black level.
4. Adjust to satisfy the specifications in the following conditions.
   - No. 27 [V.LIN.BAL (4:3)]
   - No. 28 [V.LIN (4:3)]
   - No. 62 [H. SIZE]
   - No. 63 [H.CENTER]
   - No. 65 [H.KEY]
   - No. 66 [H.KEY.BAL]
   - No. 67 [H.PIN]
   - No. 68 [H.PIN.BAL]
   - No. 69 [V.SIZE]
   - No. 70 [V.CENTER]

Specifications for DXC-9000 4:3 N/S mode

20inch	H.SIZE	18.7 ± 0.2 frames
	V.SIZE	14.0 ± 0.2 frames
14inch	H.SIZE	18.7 ± 0.2 frames
	V.SIZE	14.0 ± 0.2 frames

Note 1: Adjust V.LIN.BAL and V.LIN by tracking

Note 2: Do not move H.PHASE and V.PHASE after adjusting using U/S.
Adjust the balance of the left and right sides of the screen using H.CENTER and the balance of the top and bottom of the screen using V.CENTER.

5. Write the data.

(14) DXC-9000 blanking adjustment

1. Input the high vision monoscope signal to receive images.
2. Adjust the blanking at the top of the screen using No. 82 [V.BLK.T]. Add 5 to the data in which blanking is hidden at the top of the 16:9 mask, and write the data.
3. Adjust the blanking at the bottom of the screen using No. 83 [V.BLK.B].
   Subtract 10 from the data in which blanking is hidden at the top of the 16:9 mask, and write the data.
4. Set the U/S mode.
5. Adjust the blanking at the left side of the image using No. 72 [H.BLK].
   Scroll up the data and when the blanking comes to the left side of the image, scroll the data down until no blanking is imposed, subtract 20 from the data, and write the data.
6. Adjust the blanking at the bottom of the screen with No. 73 [V.BLK.T] and No. 74 [V BLK.B].
   Adjust so that the bottom 3-value SYNC becomes hidden, add 6 to the hidden data, and write the data. (Clear the 16:9 mask first.)

(15) DXC-9000 N/S HD/VD mode phase adjustment

1. Set the DXC-9000 N/S HD/VD mode.
2. Receive the images of DXC-9000 in the HD/VD mode, adjust No. 84 [H.PHASE] and No. 85 [V.PHASE] so that the image phase is synchronized with internal sync.
3. Write the data.

Note: Take note that the HD/VD signal output from VG-814 is output from the multi-connector and not BNC (HS, VS).

(16) FREE-RUN (NO SYNC) U/S adjustment

1. Set to the NO SYNC state by eliminating the signals.
2. Set the 16:9 mode and U/S mode at the 16:9/4:3 menu.
3. Adjust using No. 132 V.CENTER and No. 136 V.SIZE.

Specifications for FREE-RUN 16:9 U/S V.SIZE
20inch..... 208 ± 2 mm
14inch..... 143 ± 2 mm

Adjust V.CENTER so that it comes to the 16:9 vertical center.

4. Write the data.

(17) FREE-RUN (NO SYNC) N/S adjustment

1. Set the N/S mode.
2. Adjust using No. 135 [V.SIZE], and write the data.

Specifications for FREE-RUN 16:9 N/S.SIZE
20inch..... 235 ± 2 mm (perform without 16:9 masking)
14inch..... 161 ± 2 mm (perform without 16:9 masking)

(18) FREE-RUN (NO SYNC) 4:3 adjustment

1. Set the 4:3 mode and U/S mode at the 16:9/4:3 menu.
2. Adjust using No. 134 [V.SIZE], and write the data.

Note: Fix at No. 130 [H.PHASE] and No. 133 [V.PHASE].

Specifications for FREE-RUN 4:3 U/S V.SIZE
20inch..... 278 ± 2 mm
14inch..... 190 ± 2 mm

(19) FREE-RUN (NO SYNC) 4:3 N/S adjustment

1. Set to N/S.
2. Adjust using No. 131 [V.SIZE], and write the data.

Specifications for FREE-RUN 4:3 N/S V.SIZE
Add another 15 to the V.SIZE of the data at which the raster is hidden at the top and bottom bezel

(20) 1250 adjustment

1. Set the 16:9 mode and N/S mode at the 16:9/4:3 menu to receive 1250 images.
2. Copy the (10) EDTV2 N/S adjustment data. (The ( ) shows the service item No. of the copy source.)

No. 86	[H.SIZE]	(No. 40)
No. 87	[H.CENTER]	(No. 41)
No. 88	[H.PHASE]	=142 (Fixed)
No. 89	[H.KEY]	(No. 43)
No. 90	[H.KEY.BAL]	(No. 44)
No. 91	[H.PIN]	(No. 45)
No. 92	[H.PIN.BAL]	(No. 46)
No. 93	[V.SIZE]	(No. 47)
No. 94	[V.CENTER]	(No. 48)
No. 95	[V.PHASE]	=186 (Fixed)
No. 96	[H.BLK]	=00 (Fixed)
No. 97	[V.BLKY]	=255 (Fixed)
No. 98	[V.BLKB]	=00 (Fixed)

3. Write the data.
4. Set the U/S mode to receive 1250 images.
5. Copy the adjustment data of the EDTV2 mode U/S.
   (The ( ) shows the service item No. of the copy source.)

No. 99	[H.SIZE]	(No. 53)
No. 100	[H.KEY]	(No. 54)
No. 101	[H.KEY.BAL]	(No. 55)
No. 102	[H.PIN]	(No. 56)
No. 103	[H.PIN.BAL]	(No. 57)
No. 104	[V.SIZE]	(No. 58)
No. 106	[V.BLKT]	=255 (Fixed)
No. 107	[V.BLKB]	=00 (Fixed)

Copy and write the U/S data.

(21) 625pr adjustment

1. Set the 4:3 N/S mode to receive 625pr images.
2. Copy the adjustment data of DXC-9000 N/S.
   (The ( ) shows the service item No. of the copy source.)

No. 108	H.SIZE	(No. 62)
No. 109	H CENTER	(No. 63)
No. 110	H PHASE	=170 (Fixed)
No. 111	H. KEY	(No. 65)
No. 112	H.KEY.BAL	(No. 66)
No. 113	H.PIN	(No. 67)
No. 114	H.PIN.BAL	(No. 68)
No. 115	V.SIZE	(No. 69)
No. 116	V.CENTER	(No. 70)
No. 117	V.PHASE	=192 (Fixed)
No. 118	H.BLK	=00 (Fixed)
No. 119	V.BLKT	=255 (Fixed)
No. 120	V.BLKB	=00 (Fixed)

3. Write the data.
4. Set the 4:3 U/S mode to receive 625pr images.
5. Copy the DXC-9000 U/S adjustment data.
   (The ( ) shows the service item No. of the copy source.)

No. 121	H.SIZE	(No. 75)
No. 122	H.KEY	(No. 76)
No. 123	H.KEY.BAL	(No. 77)
No. 124	H.PIN	(No. 78)
No. 125	H.PIN.BAL	(No. 79)
No. 126	V.SIZE	(No. 80)
No. 128	V.BLKT	=255 (Fixed)
No. 129	V.BLKB	=0 (Fixed)

6. Write the data.

(22) Image distortion adjustment check

Check that the adjustment is carried out in the proper order or blanking may be imposed, the phase may be deviated, etc.

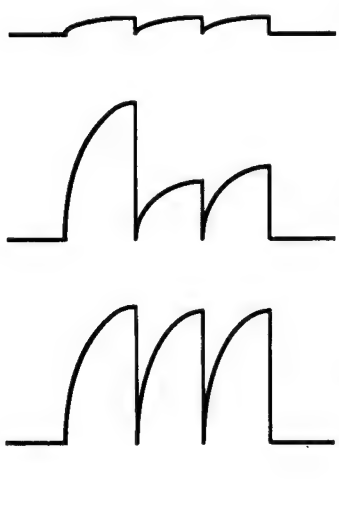
1. Set the 4:3, N/S mode.
2. Input the signals in the order of DXC-9000, 625pr, and 6253D, and check that these are received.
   Check that DXC-9900 does not change phase in the HD/VD mode.
3. Set the 4:3, U/S mode.
4. Input the DXC-9000 signal, and check that the image does not chip (check if the image is in blank or hidden by bezel), images can be received.
5. Set the 16:9, N/S mode. (Set the 16:9 mask.)
6. Input the signals in the order of 1125, EDTV2, 1250, and check that images can be received.
7. Set the 16:9, U/S mode. (Set the 16:9 mask.)
8. Input the 1125 and EDTV2 signals, and check that the image does not chip, and images can be received at the appropriate phase.
9. Set No. 196 [1080 SELECT] to "1", write the data, and check in the same way as above for the high vision (1080) N/S and U/S modes.
10. Connect the HD SDI kit, input the high vision signal (1035) and high vision (1080) signal in the U/S mode by HD SDI respectively, and check that the monitor automatically determines the 1035/1080 signal, receives it, and displays it without image chipping at the appropriate phase.

Note: When No. 197 [SYSTEM DISPLAY] is set to 1, the current system will be displayed at the bottom left of the screen.

3-7. WHITE BALANCE ADJUSTMENT AND FINAL ADJUSTMENT

3-7-1. G2 Adjustment

1. Input the all white HD component (100IRE) signal.
2. Set CONTRAST and BRIGHT to MAX (so that ABL is imposed).
3. Connect the probe of the oscilloscope to TP22 (IK) of the A board.
4. Set the service mode.
5. Adjust using No. 1 [G2].
   Raise G2 and adjust it 4 steps above the data of the first point at which the amplitude of all three pulses observed saturate.



(Note)
When saturated, the amplitude of the pulse will not change even if G2 is raised.

6. Write the data.

3-7-2. White Balance Adjustment

1. Input the all white HD RGB signal to receive images. Perform aging for more than 30 minutes.
2. After aging, input the 10-step or 20-step gray scale HD RGB signal, and receive images.
3. Set CONTRAST to MIN and BRIGHT to center click.
4. Check that 6500K is selected for the color temperature of MENU. If other values are selected, set the COLOR TEMP SELECT/ADJ screen, and set to 6500K.
5. Set the service mode. Adjust using No. 180 SUB BRIGHT.

   In the 10-step or 20-step gray-scale
   0IRE → CUT OFF
   5IRE → Adjust so that the screen slightly lights up.

6. Write the data.
7. Input the all white HD RGB signal (100IRE), and receive the images.
8. Set CONTRAST and BRIGHT to the center click.
9. Adjust the SUB CONTRAST of the 16:9 N/S mode using No. 183 [SUB CONTRAST].

   All white 100 IRE luminance 145 ± 5 [nit]

10. Adjust the luminance of the all white signal so that the luminance of the screen becomes 3 (NIT).

Note: Do not change CONTRAST and BRIGHT when adjusting the luminance to 3 (NIT) at 9.

11. Adjust 6500K RED BIAS using No. 168 [R.B] and 6500K BLUE BIAS using No. 170 [B.B], and adjust the 6500K white balance (cutoff side).

    Specification:6500K+8MPCD
    Adjust cutoff by 3 [nit]
    Note:Fix GREEN and do not change it.

12. Write the data.
13. Set the luminance of the all white signal to 100 IRE.
14. Adjust 6500K RED GAIN using No. 171 [R.G] and 6500K BLUE GAIN using No. 173 [B.G], and adjust the 6500K white balance (highlight side).

    Note:Fix GREEN and do not change it.

15. Write the data.
    Repeat adjustments 10. to 15., and adjust so that both the cut off side and highlight side satisfy the specified values.
16. Exit the service mode.
17. Press the "MENU" key, select COLOR TEMP SELECT/ADJ, select 9300K, and exit the MENU.

18. Perform the same adjustments as steps 10 to 15 in the following conditions using No. 174 [R.B], No. 176 [B.B], No. 177 [R.G], No. 179 [B.G] to satisfy the specified values.
    9300K..... RED BIAS
    9300K..... BLUE BIAS
    9300K..... RED GAIN
    9300K..... BLUE GAIN

    Specified value:9300K+8 MPCD
    Adjust cutoff by 3 [nit].

3-7-3. SUB BRIGHT Adjustment

1. Input the HD RGB gray scale signal to receive images.
2. Set CONTRAST to MIN and BRIGHT to center click.
3. Set the service mode.
4. In No. 180 [SUB BRIGHT]

    0 → CUT OFF
    5IRE → Adjust so that the screen slightly lights up.

5. Write the data.

3-7-4. SUB CONTRAST Adjustment

1. Input the DXC-9000 all white signal to receive images.
2. Set the color analyzer or luminance meter to the CRT, and set the controls on the front panel to the center click.
    APERTURE : (Center click)
    BRIGHT :50% (Center click)
    CHROMA :50% (Center click)
    CONTRAST :80% (Center click)

3. Set the service mode.
4. Set the scanning size to 4:3 N/S mode.

5. Adjust No. 181 [SUB CONTRAST] so that the 4:3 N/S luminance satisfies the specified value.

    Specified value: 140 ± 5 (NIT)
    (User control center click state)

6. Set the scanning size to 4:3 U/S mode.

7. Adjust No. 182 [SUB CONTRAST] so that the 4:3 U/S luminance satisfies the specified value.

    Specified value
    (User control center click state)
    140 ± 5 (NIT)

8. Input the all white signal of the HD component to receive images.
9. Set the scanning size to 16:9, N/S mode.
10. Adjust No. 183 [SUB CONTRAST] so that the 16:9 N/S luminance satisfies the specified value.

    Specified value: 140 ± 5 (NIT)
    (User control center click state)

11. Set the scanning size to 16:9 U/S mode.
12. Adjust No. 184 [SUB CONTRAST] so that the 16:9 U/S luminance satisfies the specified value.

    Specified value: 140 ± 5 (NIT)
    (User control center click state)

13. Write the data.

3-7-5. Component W/B Adjustment

1. Input the all white HD component signal (luminance is 3 [nit]) to receive images.
2. Set the color analyzer to the CRT, set the controls on the front panel to the standard position, and set the color temperature to 6500K.
    APERTURE :MIN
    BRIGHT :50% (Center click)
    CHROMA :50% (Center click)
    CONTRAST :80% (Center click)

3. Set the service mode.
4. Measure the color temperature ((x,y) values).
5. Adjust No. 153 [W/B DA CHROMA] so that the y color temperature becomes the standard value when the CHROMA control is set to MAX.

6. Repeat steps 4 and 5 to perform tracking.
7. Write the data.
8. Return the controls on the front panel to their standard positions.
9. Adjust No. 155 [W/B DA GREEN] so that the white balance of the HD component (c/o:3 [nit]) satisfies the specified value.
    Specified value:6500K+8MPCD
10. Write the data.
11. Write the adjustment value of step 5 added with 100 using No. 218 [W-DA CHROMA SDI]. However if the data exceeds 255, write as 255.
12. Write the adjustment value of step 9 added with 10 using No. 219 [W-DA GREEN SDI]. However if the data exceeds 255, write as 255.
13. Write the data.

SECTION 4
SAFETY RELATED ADJUSTMENTS

Perform the following checks and adjustments when replacing the following parts (marked ◪ in the schematic diagram).

◪ : A board IC2015, IC3003, IC3005,IC3006, IC3007, R1183, R1192, R1193, R1209, R1224, R1225, R1289, R1290, R3060, R3061, R3062, R3063, R3078, R3079, R3080, R3083, R3084, R3085, R3107, R3109, R3110, R3122, R3138, R3139, R3140, R3152, R3153, R3154, R3155, R3158, R3200, R3201

◪ : G board IC602, T603

+B CHECK

1. Connect a digital voltmeter to Pin ④ of CN605 of the G board.
2. Input the HD monoscope signal to receive images.
   Contrast : Center click
   Bright : Center click
3. Check that +B satisfies the specified valued.
   Specified value:+B ..... $115.0^{+0.5}_{-10}$ V

HV REF Adjustment

Note: Perform conduction for more than 5 minutes before adjustments.

1. Connect the probe of the high voltage meter to the anode cap or to the HVR empty terminal.
2. Input the high vision monoscope signal to receive images.
3. Set the service mode. (Refer to 3-1-1. Service Mode.)
4. Adjust to satisfy the specified value using No. 187 REF.DA .

Specifications for HV.REF voltage
20inch :27.0 ± 0.2 kV
14inch :25.0 ± 0.2 kV

5. Write the data.
6. Exit the service mode.
7. Adjust the focus again.

While tracking with FOCUS 1 (upper side, V) and FOCUS 2 (lower side, H) of T3003 (FBT) of the A board, adjust the focus of the whole screen consistently and not just the focus at the center.

HV. PROT. REF Adjustment

Note: Perform conduction for more than 5 minutes before adjustments.

1. Connect a digital voltmeter to TP3007 (HV.PROT.REF) of the A board.
2. Input the high vision monoscope signal to receive images.
3. Set the service mode. (Refer to 3-1-1. Service Mode.)
4. Adjust to satisfy the specified value using No. 186 PROT.DA .

Specifications for HV. PROT. REF voltage
20inch :10.460 $^{+0.000}_{-0.460}$ V
14inch :10.000 $^{+0.000}_{-0.500}$ V

Note: Set to the largest adjustment value possible.

5. Write the data.
6. Exit the service mode.

HV.PROT Check

1. Connect a d.c. stabilized power supply to Pin ⑤ of CN3008 of the A board.
2. Check that when the power is turned on, and 10.472V (20inch) and 10.020V (14inch) are applied using the stabilized power, the protector works and the raster disappears.

Specifications for HV.PROT supplied voltage
20inch :10.472V
14inch :10.020V

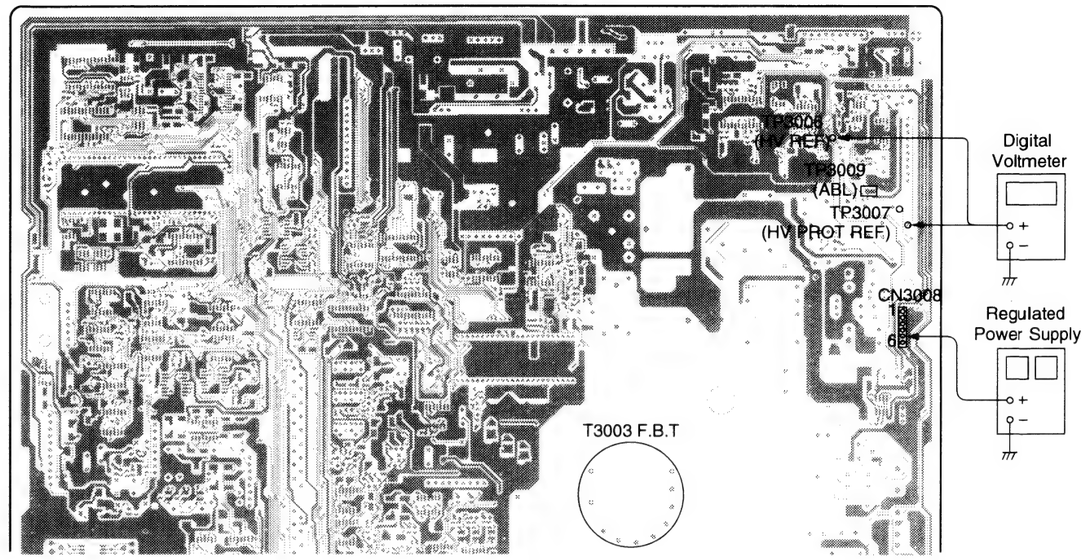
HV.PROT operating voltage
20inch :30.0kV
14inch :28.0kV

3. Turn off the power and turn it on again to recover.

IK.PROT Check

1. Set to the no-signal state.
2. Connect + side of the stabilized power supply to the TP3009 (ABL) and – side to less than –5V. Check that the protector works and the raster disappears.
3. Turn off the power and turn it on again to recover.

A BOARD – A SIDE –



G BOARD – B SIDE –

SECTION 5
CIRCUIT ADJUSTMENTS

5-1. PREPARATIONS

1. Equipment used

(1) Signal generator (meeting signal specifications)
(2) Oscilloscope
(3) Frequency counter
(4) Constant-voltage power supply

2. Signal

Note 1: For the following items, input signals of the level indicated in the Specified Level column of the table.
Note 2: Input to "INPUT A" unless where the signal input is specified.

Table of Signal Specifications

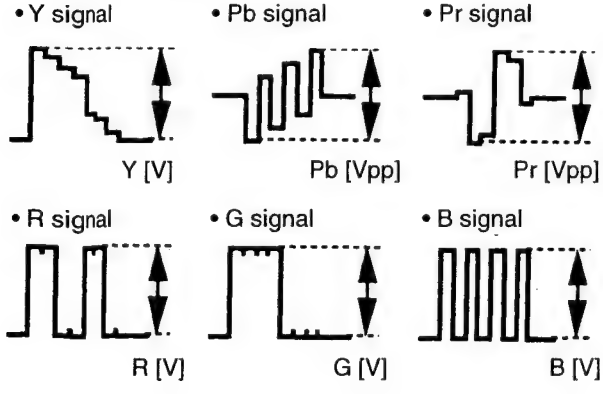
Signal		Details of Signal	Specified Level p-w
Compo-nent	HD EDTV2 CCIR 274M	100% white (Y)	0.700 [V]
		75% white (Y)	0.525 [V]
		100% color (Pb, Pr) This item is peak-peak	0.700 [Vpp]
		75% color (Pb, Pr) This item is peak-peak	0.525 [Vpp]
R G B	HD EDTV2 CCIR 274M	100% white (R, G, B)	0.700 [V]
		75% white (R, G, B)	0.525 [V]

Signal Name

HD :BTA S-001A (SMPTE 240M) specifications (1125/59.94, 60 Hz 2:1)
:SMPTE 274M specifications
EDTV2 :BTA T-1004 (SMPTE 293M) specifications (525/59.94 Hz 1:1)
CCIR :Rec-709 specifications (1250/50 Hz 2:1)

Matrix Ratio

HD:BTA S-001A specifications
Y=0.212R+0.701G+0.087B
EDTV2:BTA T-1004 specifications (SMPTE 293M)
Y=0.299R+0.587G+0.114B
CCIR/274M:Rec-709 specifications
Y=0.213R+0.715G+0.072B

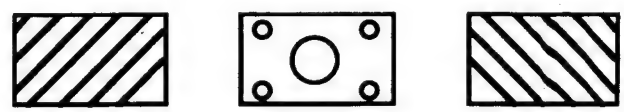


5-2. A BOARD ADJUSTMENTS

5-2-1. Horizontal Oscillation Frequency Adjustments

(1) BTA1125 (SMPTE 240M/274M) F0 adjustments

1. Perform conduction for more than 5 minutes before adjustments.
   Input the high vision and monoscope signals to receive images.
2. Set CONTRAST and BRIGHT to center click.
3. Set the service mode. Refer to "3-1-1. Service Mode".
   Change the No. 196 [1080 SELECT] data from "1" to "0".
4. Perform adjustments roughly so that there are no jitters on the screen using No. 2 [H.OSC], No. 3 [H.SIZE], No. 6 [H.KEY], No. 8 [H.PIN].
5. Exit the service mode.
6. Display the MENU screen, select SYNC SELECT, and set the EXT COMPOSITE SYNC mode.
7. Return to the MENU screen, and select 16:9/4:3 to set the 16:9 mode.
8. Set the service mode again.
9. Connect a frequency counter to TP3004 (HD).
10. Adjust No. 2 [H.OSC] so that the specified value is satisfied.

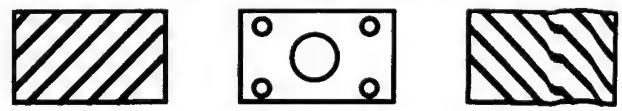


BTA1125 F0 specifications : 33.75 ± 0.2kHz

11. Write the data.
    Change back the No. 196 [1080 SELECT] data from "0" to "1".
12. Exit the service mode.

(2) EDTV2 F0 adjustments

1. Input the EDTV2 monoscope signal to receive images.
2. Set CONTRAST and BRIGHT to center click.
3. Set the service mode.
4. Perform adjustments roughly so that there are no jitters on the screen using No. 39 [H.OSC], No. 40 [H.SIZE], No. 43 [H.KEY], No. 45 [H.PIN].
5. Exit the service mode.
6. Display the MENU screen, select SYNC SELECT, and set the EXT COMPOSITE SYNC mode.
7. Return to the MENU screen, and select 16:9/4:3 to set the 4:3 mode.
8. Set the service mode again.
9. Connect a frequency counter to TP3004 (HD).
10. Adjust No. 39 [H.OSC] so that the specified value is satisfied.



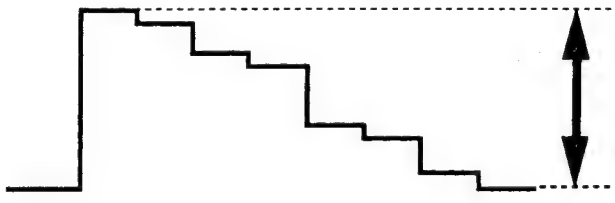
EDTV2 F0 specifications : 31.50 ± 0.2kHz

11. Write the data.
12. Exit the service mode.

5-2-2. Adjustment of Signals

(1) VIDEO Y, DA2 adjustment

1. Input the high vision component 100% color bar to receive images.
2. Connect the probe of the oscilloscope to TP1005 (2Y).
3. Set the service mode.
4. Adjust No. 154 [Y.DA2] so that the amplitude of the waveform satisfies the specifications.



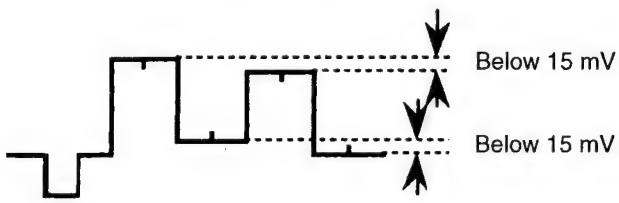
Specifications for amplitude of signal components :
750 ± 15 mVpp

5. Write the data.
6. Exit the service mode.

(2) MATRIX BTA adjustments

(A) R IN

1. Input the high vision component 100% color bar to receive images.
2. Connect the probe of the oscilloscope to TP1010 (R.IN).
3. Set the service mode.
4. Adjust using No. 156 [MDA1].

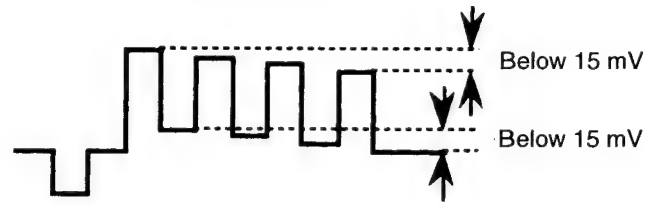


Note: If the conditions are not satisfied at the top and bottom of the waveform at the same time, adjust so that the conditions at the top are satisfied.

5. Write the data.
6. Exit the service mode.

(B) B IN

1. Input the high vision component 100% color bar to receive images.
2. Connect the probe of the oscilloscope to TP1012 (B.IN).
3. Set the service mode.
4. Adjust using No. 157 [MDA2].

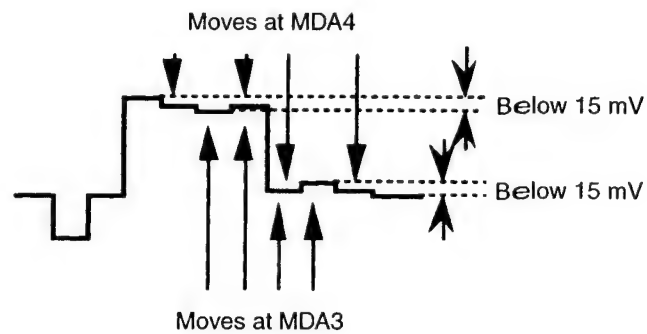


Note: If the conditions are not satisfied at the top and bottom of the waveform at the same time, adjust so that the conditions at the top are satisfied.

5. Write the data.
6. Exit the service mode.

(C) G IN

1. Input the high vision component 100% color bar to receive images.
2. Connect the probe of the oscilloscope to TP1011 (G.IN).
3. Set the service mode.
4. Adjust using No. 158 [MDA3] and No. 159 [MDA4].



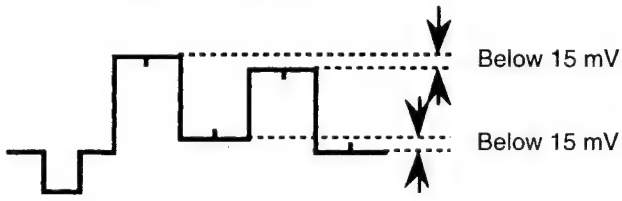
Note: If the conditions are not satisfied at the top and bottom of the waveform at the same time, adjust so that the conditions at the top are satisfied.

5. Write the data.
6. Exit the service mode.

(3) MATRIX N10 adjustments

(A) R IN

1. Input the EDTV2 component 100% color bar to receive images.
2. Connect the probe of the oscilloscope to TP1010 (R.IN).
3. Set the service mode.
4. Adjust using No. 164 MDA1.

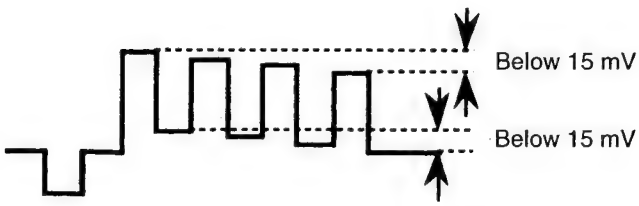


Note: If the conditions are not satisfied at the top and bottom of the waveform at the same time, adjust so that the conditions at the top are satisfied.

5. Write the data.
6. Exit the service mode.

(B) B IN

1. Input the EDTV2 component 100% color bar to receive images.
2. Connect the probe of the oscilloscope to TP1012 (B.IN).
3. Set the service mode.
4. Adjust using No. 156 MDA2.

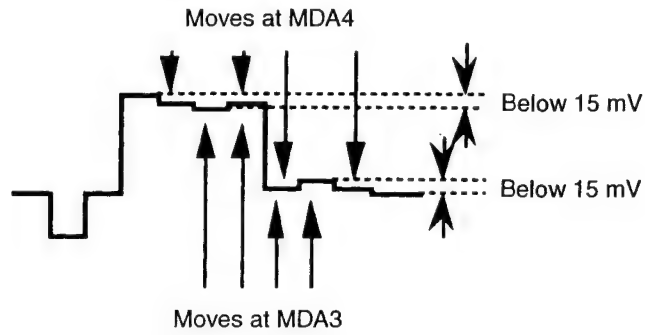


Note: If the conditions are not satisfied at the top and bottom of the waveform at the same time, adjust so that the conditions at the top are satisfied.

5. Write the data.
6. Exit the service mode.

(C) G IN

1. Input the EDTV2 component 100% color bar to receive images.
2. Connect the probe of the oscilloscope to TP1011 (G IN).
3. Set the service mode.

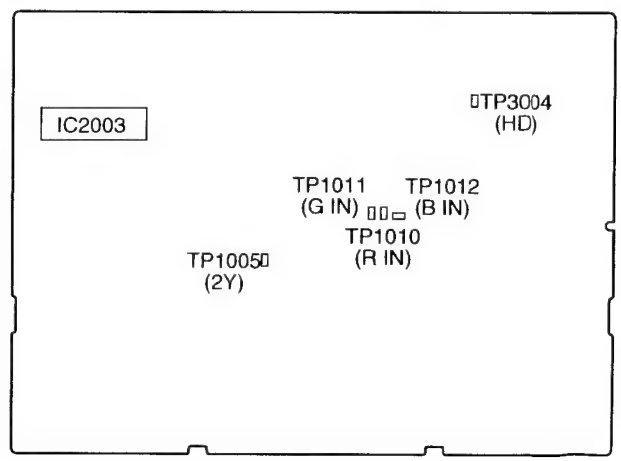


Note: If the conditions are not satisfied at the top and bottom of the waveform at the same time, adjust so that the conditions at the top are satisfied.

4. Adjust using No. 166 MDA3 and No. 167 MDA4.

5. Write the data.
6. Exit the service mode.

A board (Component Side)



(4) MATRIX CCIR Adjustment

(A) R IN

1. Input the SMPTE 274M component 100% color bar to receive images.
2. Adjust using No. 160 MDA1 in the same way as (2) MATRIX BTA adjustment (A).
3. Write the data.

(B) B IN

1. Input the SMPTE 274M component 100% color bar to receive images.
2. Adjust using No. 161 MDA3 in the same way as (2) MATRIX BTA adjustment (B).
3. Write the data.

(C) G IN

1. Input the SMPTE 274M component 100% color bar to receive images.
2. Adjust using No. 162 MDA3 and No. 163 MDA4 in the same way as (2) MATRIX BTA adjustment (C).
3. Write the data.

SECTION 6
CIRCUIT DESCRIPTIONS

6-1. A BOARD

6-1-1. A Board (1/4) Circuit

The 1/4 circuit is a sync signal processing block.

The CS signal (CS:Composite Sync, however Pin ① may be input with not only the CS signal but the G/Y as well by sync selection of the user) input from Pins ① of CN4 is sync-chip clamped by Q7 and Q12, passed through the sync

separation circuit composed of Q4006 to Q4016, separated to H sync and V sync, converted to negative polarity (Q4003, Q4004), and input to IC4006 (MC74HC153B) which is a sync select switch IC. IC4006 is a switch of the 4-input 1-output

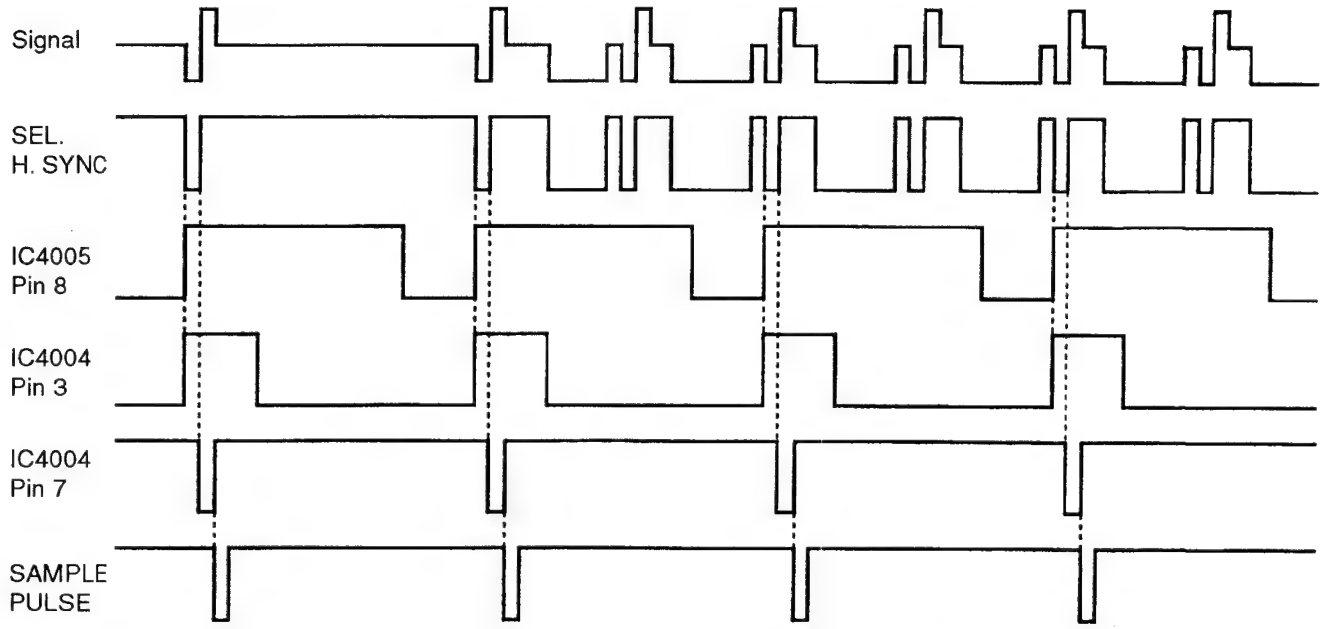
2-circuit. It has sync separation circuits corresponding to the following signals:HD-VD input from Pins ⑦ and ⑨ of CN4, H sync and V sync which passed through the sync separation circuit, HD and VD input from the optional HD-SDI board, and Eureka format signals converted from H sync input from the sync separation circuit and V sync input from the Eureka sync separation circuit. The circuits are switched in the order of IC3 and the IC5.

The $\overline{\text{SEL H}}$ output from Pin ⑦ of IC4006 is input to the interlace/noninterlace determination circuit (ICs 1, 2:determines whether the input signal is interlaced or non-interlaced and sends data to the microprocessor), H delay circuit for deflection block (IC4005:circuit which delays the phase of the H sync with extracted equivalent pulse during H/V DELAY), and pulse generation circuit for sampling (IC4004, IC4009, IC4010) (Fig. 6-1).

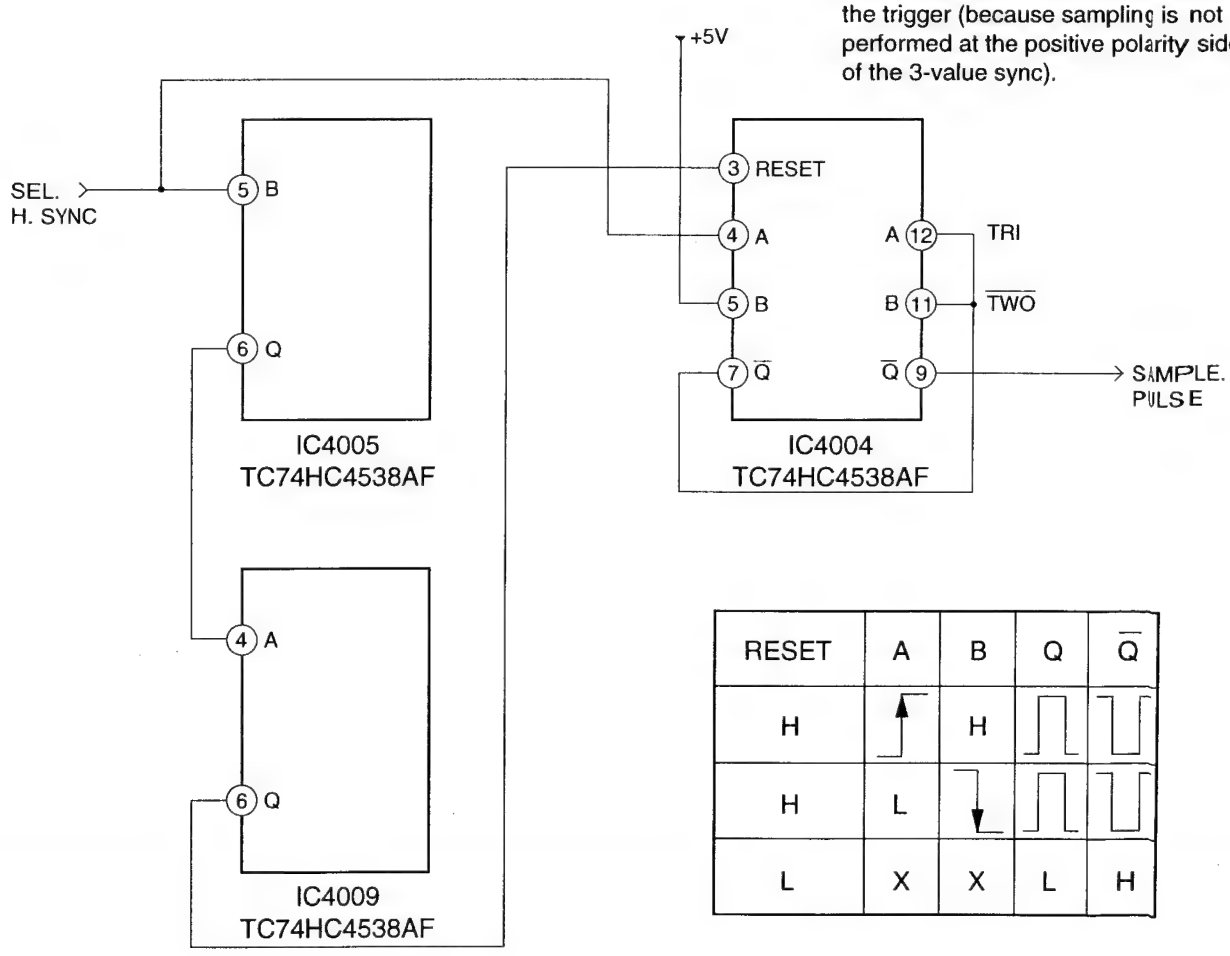
The $\overline{\text{SEL V}}$ output from Pin ⑧ of IC4006 is input respectively to the interlace/noninterlace determination circuit (ICs 1, 2), V delay circuit for deflection block (IC4003:circuit which delays the phase of the V sync during H/V DELAY).

IC4001 and IC4002 are shift registers for the optional HD-SD1.

Fig. 6-1 (1). PHM Sampling Pulse Generation Circuit Timing Chart (Input:BTA S-001, V sync Periphery)

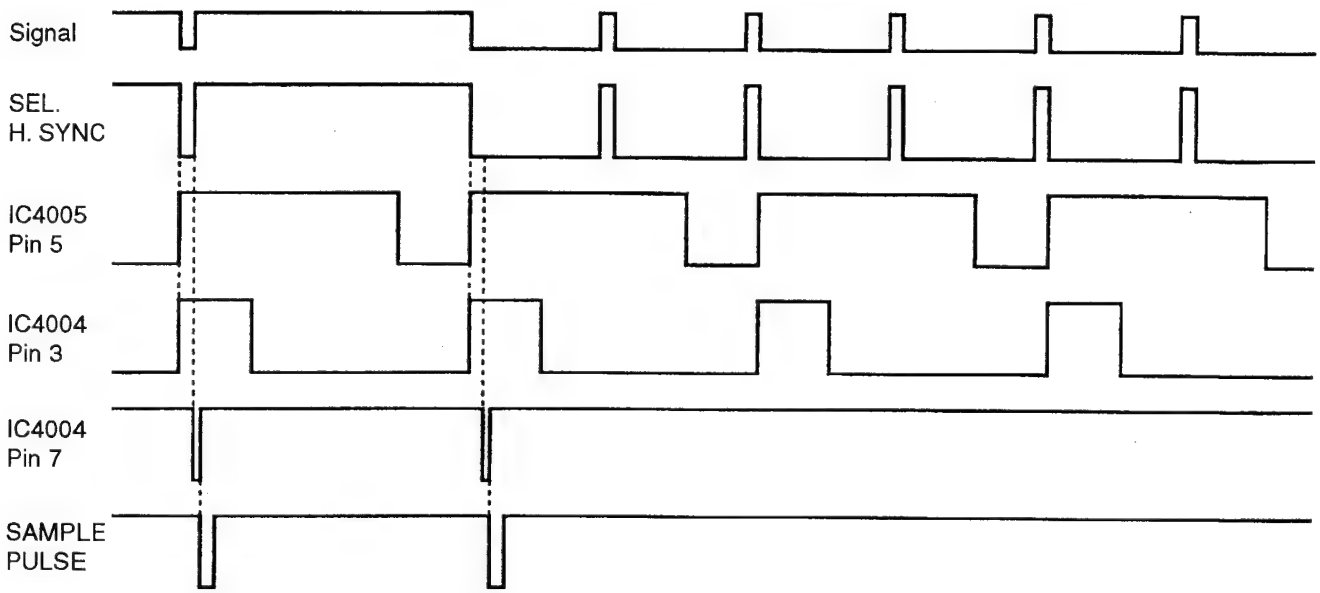


As BTA S-001 is a 3-value sync, it generates the sampling pulse using the rising edge of Pin ⑦ of IC4004 as the trigger (because sampling is not performed at the positive polarity side of the 3-value sync).

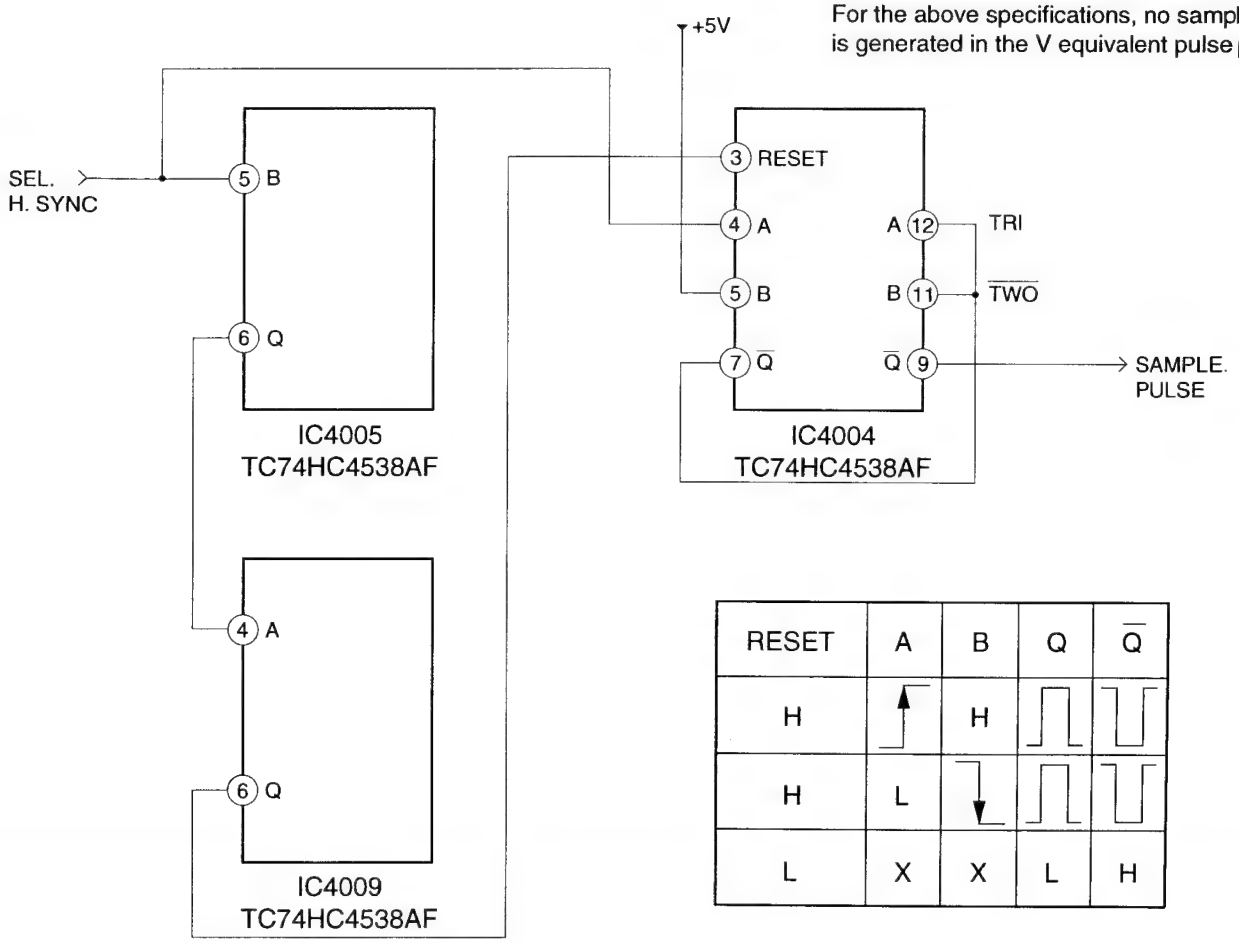


RESET	A	B	Q	$\overline{Q}$
H	↑	H	⊓	⊔
H	L	↓	⊓	⊔
L	X	X	L	H

Fig. 6-1 (2). PHM Sampling Pulse Generation Circuit Timing Chart (Input:BTA T-1004, DXC-9000V Sync Periphery)



For the above specifications, no sampling pulse is generated in the V equivalent pulse period.



RESET	A	B	Q	$\overline{Q}$
H	↑	H	⊓	⊔
H	L	↓	⊓	⊔
L	X	X	L	H

6-1-2. A Board (2/4) Circuit

The 2/4 circuit is a signal processing block.

IC1005 (MM1231XFF) is a switch which switches the G,B,R signals or Y, Pb, and Pr signals input from Pins ③, ⑤, and ⑦ of CN5, and the Y, Pb, and Pr signals of the optional HD-SDI input from Pins ⑦, ⑨, and ⑪ of CN4003. The output of IC1005 is input to the circuit (IC5002 to IC5004) which switches the retrace of H to the pedestal level. This circuit samples the pedestal (back porch) of the input signal (IC5004:MC14066BF), holds the potential to the capacitor, and switches the retrace portion of H to the voltage held (IC5002:MC14053BF). The signal output from the switching circuit is input directly to IC1015 (MM1231XFF:switches the RGB input signal and signals converted to RGB from the component) when the RGB mode is selected. If the Component mode is selected, it is input to IC1015 via the aperture circuit, chroma circuit, and matrix circuit.

The aperture circuit is composed of DL1001, DL1002, IC1016 (CXA17395), etc. It enhances the contour by inputting the difference between the Y signal (luminance signal) and
signals delayed in the delay line into the amplifier in IC1016, and adds the amplified difference to the signal (Q1029 base ground amplifier).

The chroma circuit is composed of IC1018 (LM393M), 1022 (CXA1521M), 1023 (CXA1521M), etc. It inputs the Pb and Pr signals (color difference signals) into the electronic control (IC1022, IC1023) to control the amplitude. It also functions to eliminate the chroma components by switching the signal to DC at a certain level when selecting the signal.

The matrix circuit serves to calculate the Y, Pb, and Pr signals pedestal clamped by IC1008 and IC1009 (MC14066BF) to generate the GBR signal. (G=Y-αPb-βPr:α, β are constants, B=Y+Pb, R=Y+Pr). In this circuit, the amplification of IC1007 and IC1010 (CXA1211M) is controlled by DAC for compatibility with three types of matrix ratios-BTA-S001, SMPTE, and Eureka.

The G, B, R signals selected by IC1015 (MM1231XFF) is input to the smear-proof circuit. This is a countermeasure circuit against poor pulse characteristics of IC1016 (when signals changing from white to black like the WINDOW signal are input, at the output side, the level of the white portion that had turned black will be lower than the actual black). This circuit generates pulse corresponding to the level when a signal higher than the pedestal level is input and adds this pulse to the original signal to deal with the poor characteristics (Fig. 6-2).

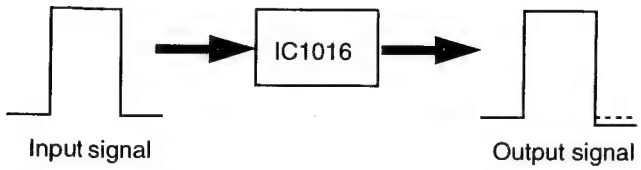
The G, B, R signals output from the smear-proof circuit are input to IC1016 (CXA1739S). This IC controls CONTRAST, BRIGHT, and the aperture, controls the auto white balance by detecting the current of the CRT cathode, performs blanking of signals, and adds the OSD (On Screen Display) generated by IC2014 (μPD6451GT) of the A board (3/4) circuit. The OSD signal is a digital signal, and because it is input to IC1016, and not passed through the smear-proof circuit mentioned above, smear of the screen occurs.

The circuit composed of IC1019 (TC74HC4538AF), IC5008 to IC5010 (TC74HC4538AF, TC7W74F, TC4569F) generates the timing for 4:3 AREA, MARKER (Fig. 6-3).

IC1001 (MC14094BF) is a shift register which outputs various control signals. IC1002, IC1011, IC2015 (M62358FP) is a DAC (D/A converter) which controls various adjustment values. IC5001 (TC74HC4538AF) generates clamp pulses used for IC1016
from the return pulse of the deflection block. IC1012 and IC1013 (MC14053BF) are switches which switch whether to control contrast, chroma, bright, and aperture using the controls on the front panel, or using the remote control unit (in this model, as the values cannot be switched using the remote control unit, the switches will always be set to the front controls.)

The circuit composed of Q1050 is the bright ABL circuit while the circuit composed of Q1051, Q1065 to Q1067 is a contrast ABL circuit. These ABL circuits function to decrease bright and contrast to prevent the deterioration of the CRT when the whole screen or some parts of the screen are too bright.

*** Before countermeasure**



*** After countermeasure**

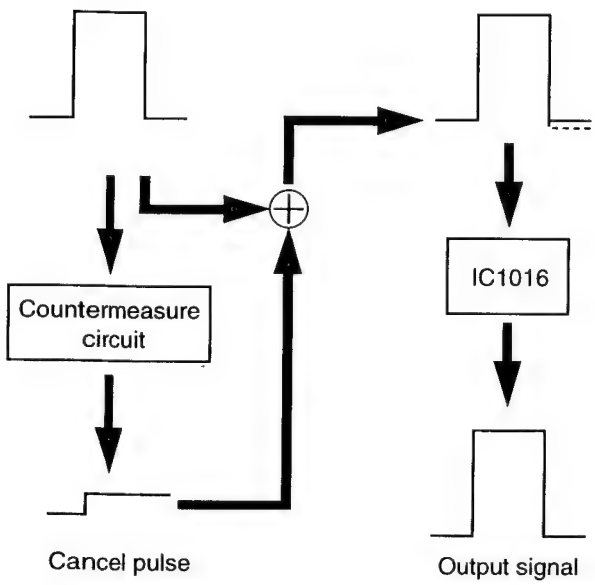
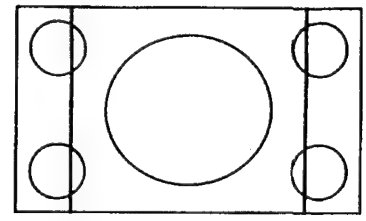
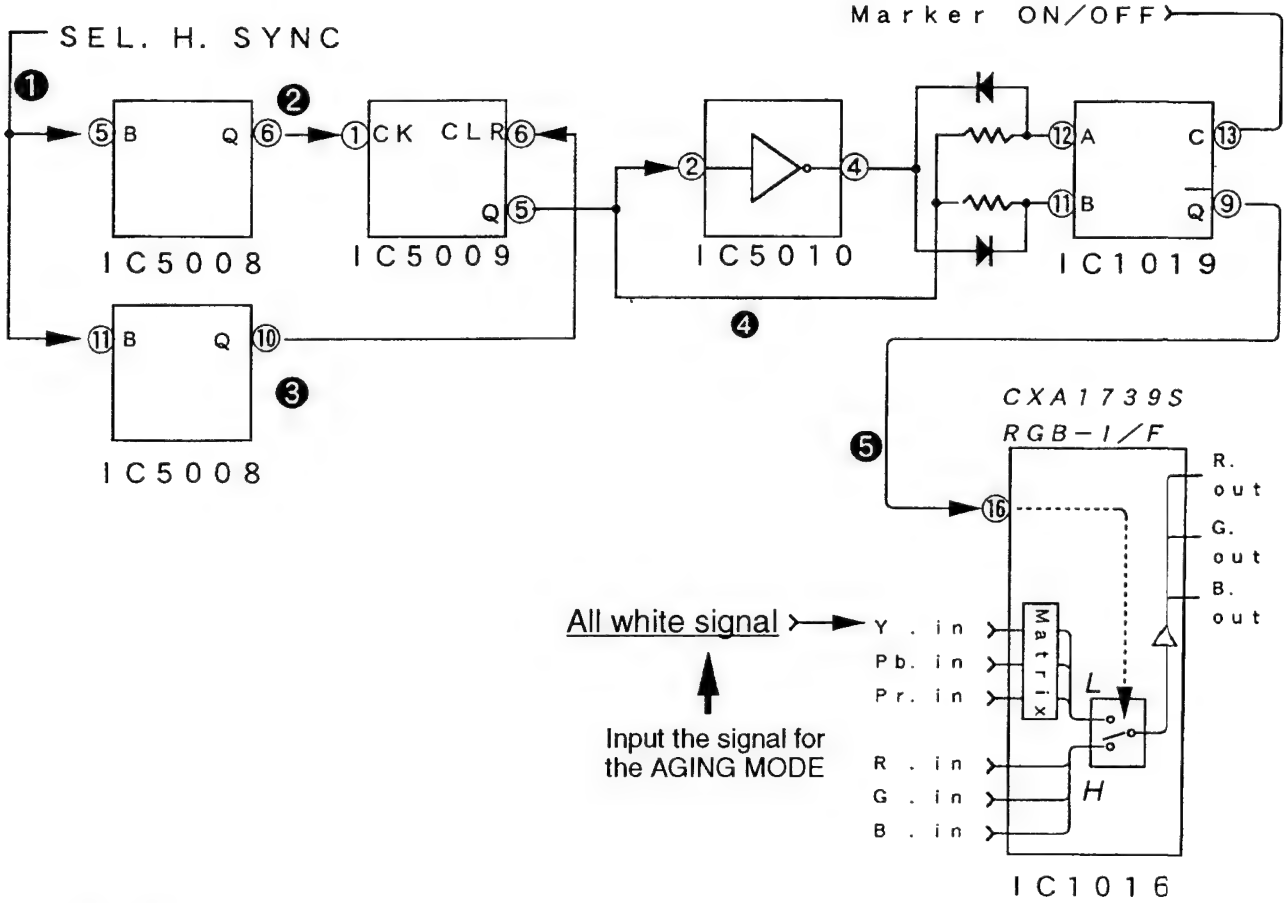


Fig. 6-2

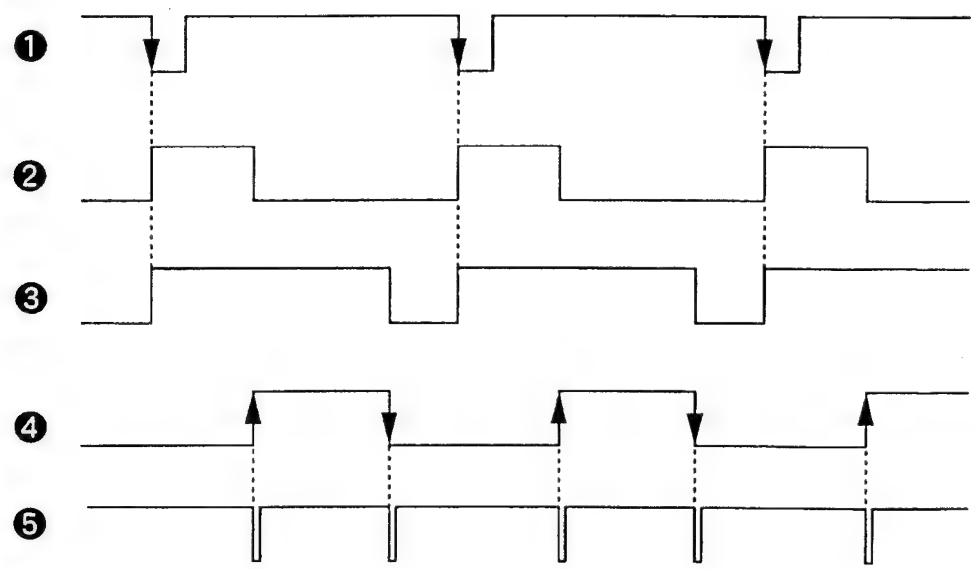
Fig. 6-3. PHM4:3 Marker Timing Chart

*** Block Diagram**





*** Timing Chart**



6-1-3. A Board (3/4) Circuit

The 3/4 circuit is a small signal processing block for the microprocessor and deflection block.

IC2003 (HD6473257P) carries out various operations, control, determination, etc. using the CPU of the unit. The microprocessor mainly differentiates the input signal, loads data corresponding to the signal from the IC2005 and IC2006 (NM24C04EM8) memory, outputs control commands corresponding to the contents of the memory to the shift register and DAC, and controls various signal blocks and deflection block.

IC2004 (MM1170BF) is a microprocessor watchdog timer. It generates reset pulses when the power voltage is cut to reset the microprocessor. When the system operates incorrectly, it also generates the reset pulse intermittently to prevent over-running of the microprocessor.

IC2013 (CXA1543M) is an oscillator of horizontal and vertical deflection frequencies. It controls the frequencies and phases of the H. Sync and V. Sync input from IC4006 (MC14053B) of the 1/4 circuit to generate HD and VD which are drive signals of the deflection block. IC2008 (CXA1470AM) and IC2010 (CXA8021M) is an IC which generates the correction waveform for the deflection block. IC2012 (MC14066BF) is a switch which switches the amplitude level of the vertical deflection waveform which switching the screen size between 4:3 and 16:9. IC2020 (MC74HC74AF) generates the pulse for determining the vertical blanking pulse and synchronizes the chroma off (decreases the chroma control and switches the color difference signal to DC) timing with the vertical blanking.

IC2001 (NJM7912FA) and IC2002 (NJM7905FA) are –12V and –5V regulators respectively.

6-1-4. A Board (4/4) Circuit

The 4/4 circuit is composed of an audio block, horizontal deflection block, video signal pre-amplifier, and high voltage block.

IC3001 (AN5265) is an audio amplifier. By turning ON the Q3002 transistor, the sound can be muted.

IC3003 (CXA1544M) is composed of a circuit which outputs the pulse for PWM control of the horizontal deflection output (feed backs the horizontal deflection signal returned and controls the pulse width) and a circuit which outputs the pulse for PWM control of high voltage outputs. IC3005 (TL431CPS) is a shunt regulator which generates high voltage reference voltages.

Q3003 to Q3011 and Q3033 to Q3035 are pre-amplifiers. The G, B, R signals output from the 2/4 circuit IC1016 (CXA1739S) are input, amplified by approximately 5.3 dB, and output to the C board.

IC3009 (LA6500FA) controls the current flowing to the LCC coil (Landing Compensation Coil).

Q3031 (2SD1878) is a HV OUT transistor. The base is input with a horizontal drive signal output from Pin ㉓ of IC3003 via T3001 HDT (Horizontal Drive Transformer). The PWM output from high voltage of IC3003 is input to the Q3030 (IRF19630GS) gate of FET. Converted to the +B level PWM output, added to the Q3031 collector via the T3002 LOT (Linearity Output Transformer), and input to the T3003 FBT (flyback transformer) to generate high voltage (20inch :27 kV, 14inch :25 kV). The 30V output voltage of the secondary winding of the FBT is input to L3007:DFT (Dynamic Focus Transformer) to generate the parabola waveform voltage in the horizontal period, and added to the Focus input terminal of the FBT. Good focus can be obtained at the center and corners in the horizontal direction on the screen by this dynamic focus. Q3042 (2SC3262) is a switch for attenuates the dynamic focus in the horizontal blanking period, to reduce interfering to the current detection pulse (reference pulse used for auto white balance) of the dynamic focus voltage.

(2/2) and Q3016, 3017, 3039 of IC3007 (LM393M) is a IK protector. When Q3016 turns ON, the IK protector operates. (2/4) and (3/4) of IC3004 (MC14011BF) is a H protector. When Pin ① or ② of IC3004 drops to a "low" level, the H protector operates.

IC3004 (4/4) is a V protector. When Pin ⑧ or ⑨ of IC3004 drops to a "low" level, the V protector operates.

(1/2) and Q3036 to Q3038 of IC3007 (LM393M) is a HV protector. When Q3037 turns ON, the HV protector operates. IC3006 (TL431CPS) is a shunt regulator which generates reference voltage for the high voltage protector.

6-2. P BOARD

The P board is composed of the horizontal/vertical deflection output circuit and V.STA (Vertical Static Convergence) circuit.

IC901 (TDA8172) is an IC for vertical deflection output. The output is connected to the DY (deflection yoke). IC901 is fed back with the return voltage of DY. By changing the feedback volume, the V deflection volume is changed between 14-inch and 20-inch. Q902 is a V protector switch. By switching this on, the protector operates.

Q911 is a H.OUT (horizontal deflection output) transistor.

The output is connected to DY. When this transistor stops outputting, the voltage separating the output (C932 and C933) becomes "0" and the H protector operates. The correction of the horizontal deflection is performed by

switching the +B voltage using the FET Q903 (IRF19630GS). If the H.OUT transistor breaks down or short-circuits, R916 and Q903 will break down simultaneously. For this reason, when Q911 breaks down, there is a need to replace them simultaneously.

IC904 (RC4558) (2/2) is a V.STA circuit. The output is connected to the NTC (Neck Twist Coil) at the neck of the CRT.

6-3. C BOARD

The C board is a video amplifier. The G, B, R signals input from the pre-amplifier is input to a video amplifier of the C board (cascade connection push-pull output type). The gain is about 25 dB for 14inch, and about 27 dB for 20inch.

6-4. G BOARD

The G board is a power supply board. IC601 (STR-M6524) is a primary switching regulator IC. When a load current flows excessively, the OCP (Over Current Protector) operates. IC602 (STR-S3115) is a secondary series regulator IC. It generates +B voltage (115V). When the load current of the +B line flows excessively, R616 becomes open. T603 is a SRT (Switching Regulation Transformer). Q602 is a 160V regulator. When load current flows excessively, R629 becomes open.

IC603 (NJM7806FA) and 604 (NJM7805FA) are a 5V (A) and 5V (B) 3-terminal regulator respectively. When load current flows excessively, R617 becomes open. Q603 is a +15V regulator. When load current flows excessively, R617 becomes open. Q601 is a degauss switch. When this transistor turns ON, the relay (RY601) turns ON, and current flows to the degauss coil. PH601 is a photo coupler. The current corresponding to changes in the +B current due to AC voltage changes or load changes flows from Pin ① to Pin ② of the photo coupler As a result, the current flowing from Pin ⑤ to Pin ④ of the photo coupler is controlled by this current. In other words, a feedback is imposed so that when the +B voltage becomes high, the current flowing from Pin ⑤ to Pin ④ increases, decreases the switching pulse width of IC601, and decreases the +B voltage. When the +B voltage becomes low, a feedback is imposed so that the current flowing from Pin ⑤ to Pin ④ decreases, increases the switching pulse width of IC601, and increases the +B voltage.

6-5. H BOARD

The H board is a control board.

RV501 to RV505 are user controls.

S501 to S511 are tact switches for user control.

6-6. Q BOARD

The Q board is an input/output terminal board.

IC401 (MM1231XFF) is a switch which switches the video signals of inputs A and B. Q424 to Q429 are switches which prevent video crosstalk. When input A is selected, Q424 to Q426 turn ON, when input B is selected, Q427 to Q429 turn ON, and when input C is selected, Q424 to Q429 turn ON, to turn off the buffers (Q401 to Q403, Q405, Q407, Q409) of the signal line and cut off the signal. IC402 (MC74HC00AF) performs logic calculation for turning ON/OFF the switch which prevents video crosstalk. IC403 (MM1113XFF) is a switch which switches the signal input to the sync separation circuit on the A board to G/Y or HD/CS. IC404 (MC14053BF-T2) is a switch which switches the HD/CS, VD, AUDIO signals of inputs A and B. IC405 (MC74HC86F-T2) carries out logic calculation fixing the HD or VD signal input in the positive polarity or negative polarity to the negative polarity.

IC406 and IC407 (XRU4021BF) convert the parallel remote input to the serial remote. When Pin ⑨ (P/S terminal) of IC406 and IC407 drop to "Low", it outputs the parallel-input data in serial format from the rising edge of the next clock sequentially. (The length of 1 data is the same as 1 period of the clock. The data output is output sequentially in the order of P8, P7...P1 of Pin ① of IC406, then P8, P7...P1 of IC407.

6-7. DETECTION OF MALFUNCTIONS

This unit is equipped with a malfunction detection circuit. The malfunction is differentiated by Pins ㊳ to ㉟ of the CPU (IC2003). However malfunctions where nothing is input to the above pins cannot be detected. The malfunction can be differentiated by the number of times the remote LED on the front control panel of the unit blinks.

* Number of Blinking and Malfunction Location

Once ..... Horizontal deflection output malfunction (short-circuit of Q911, Q903, R916 of the P board, etc.)

Twice ..... Vertical deflection output malfunction (Short-circuit of IC901 of the P board, etc.)

Three times .... High voltage protector operations

Four times ..... IK protector operations

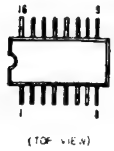
Five times ..... The FAN has stopped, or the fan stopped due to high voltage output malfunction.

* When no image is output and the remote LED is not lit

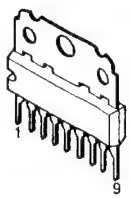
* When the power LED is not blinking:
  12V fault may be suspected.
* When the UNDERSCAN switch is pressed and the UNDER SCAN LED is not lit:
  5V (B) fault may be suspected.
* Both above:
  The whole power board may be faulty.
  (Disconnection of fuse, no AC, SRT fault)

SECTION 7
SEMICONDUCTORS

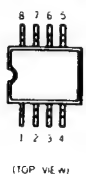
ADM232LAR-REEL
MC14053BF
MC14538FEL
MC74HC153F
MM1231XFE
TC74HC4538AF
TC74VHC595F
XRU4021BF



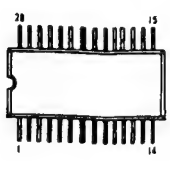
AN5265



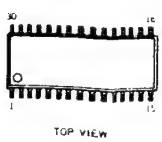
CXA1211M
CXA1521M
LM358M
LM393M
LTC490CS8
MA1111XFF
MM1113XFF
NJM4558M
NM24C04EMB
TC7W74F
TL431CPS



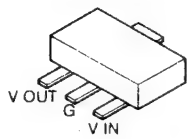
CXA1470AM
CXA8021M



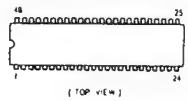
CXA1543M



CXA1544M

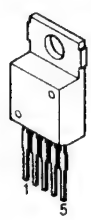


CXA1739S

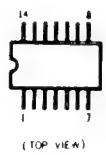


HD6473257P10

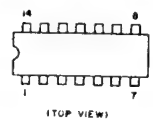
LA6500-FA



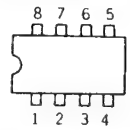
LM324DR
MC14011BF
MC14013BF
MC14066BF
MC74HC00AF
MC74HC74AF
MC74HC86AF
MC74HC125AF



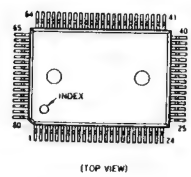
MC74HC32AN



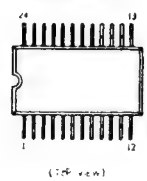
MM1170BFB



MC14094BF

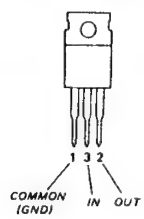


M62358FP

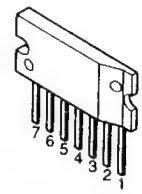


NJM78M05FA

NJM7806FA
NJM7905FA
NJM7912FA



RC4558P



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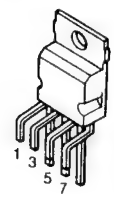

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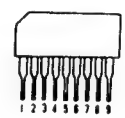

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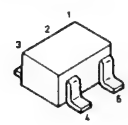

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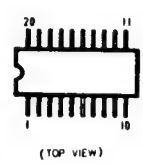

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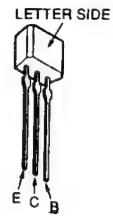

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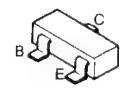

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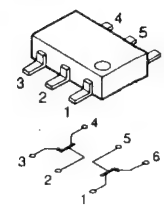

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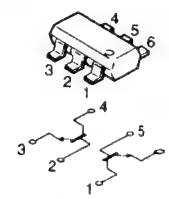

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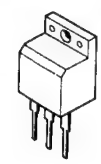

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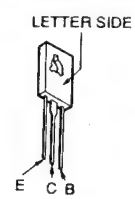

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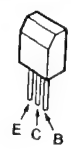

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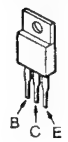

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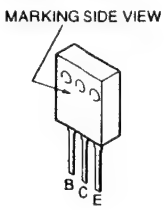

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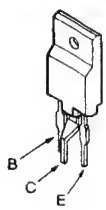

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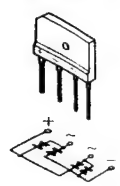

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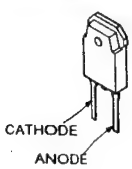

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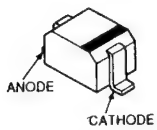
RD12SB2
RD13SB2
RD27SB2
RD5.1SB3
RD6.2SB2



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RD5.6ESB2
RD9.1ESB2
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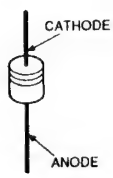

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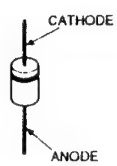

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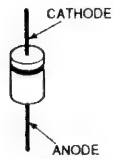

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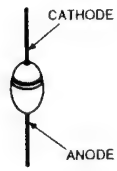

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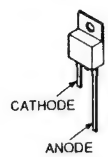

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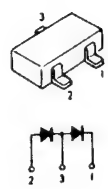

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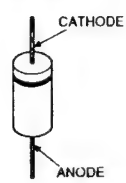

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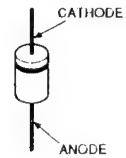

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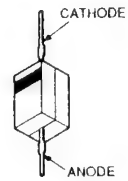

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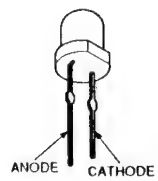

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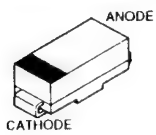

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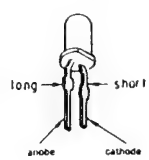


SECTION 8
EXPLODED VIEWS

NOTE :

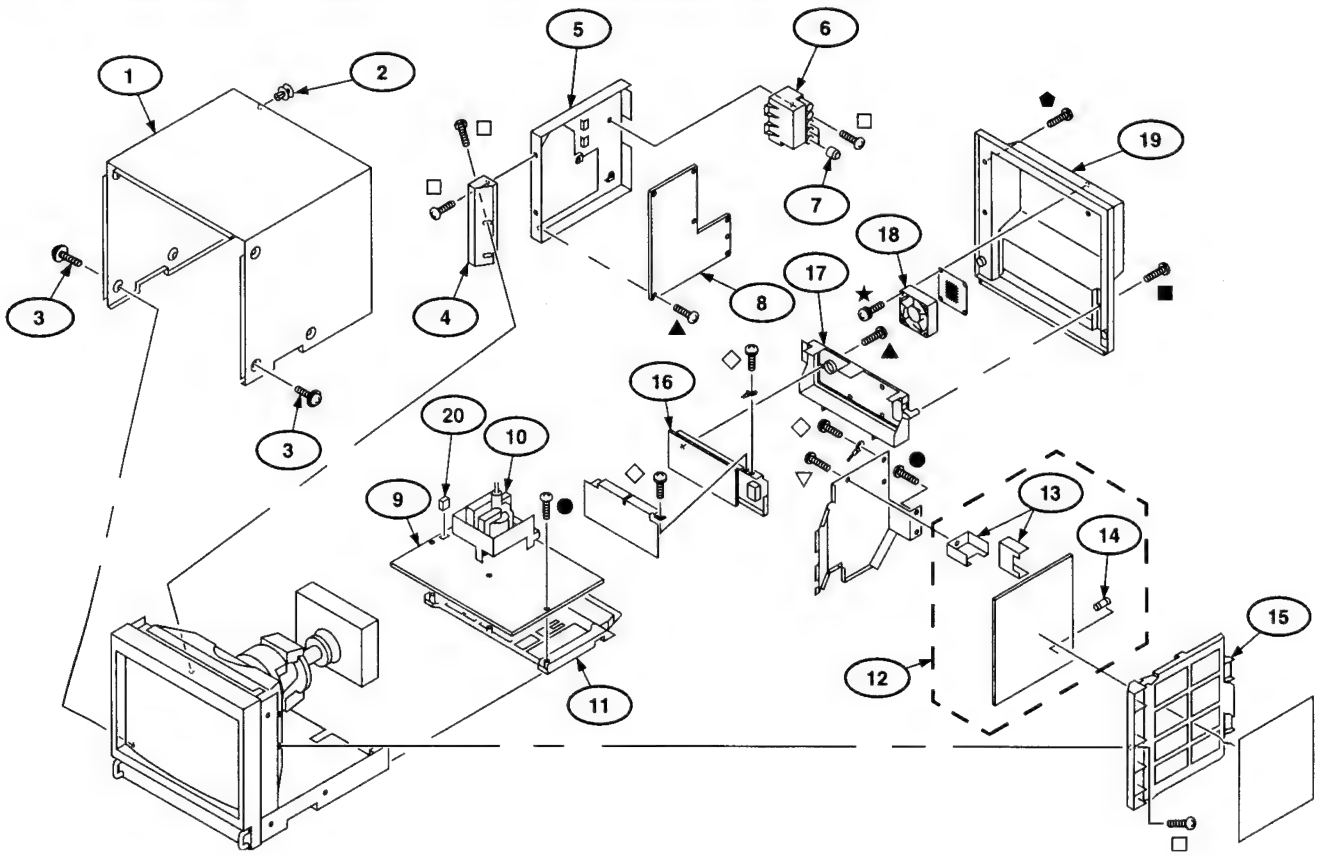
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

8-1. CHASSIS BLOCK (14inch)

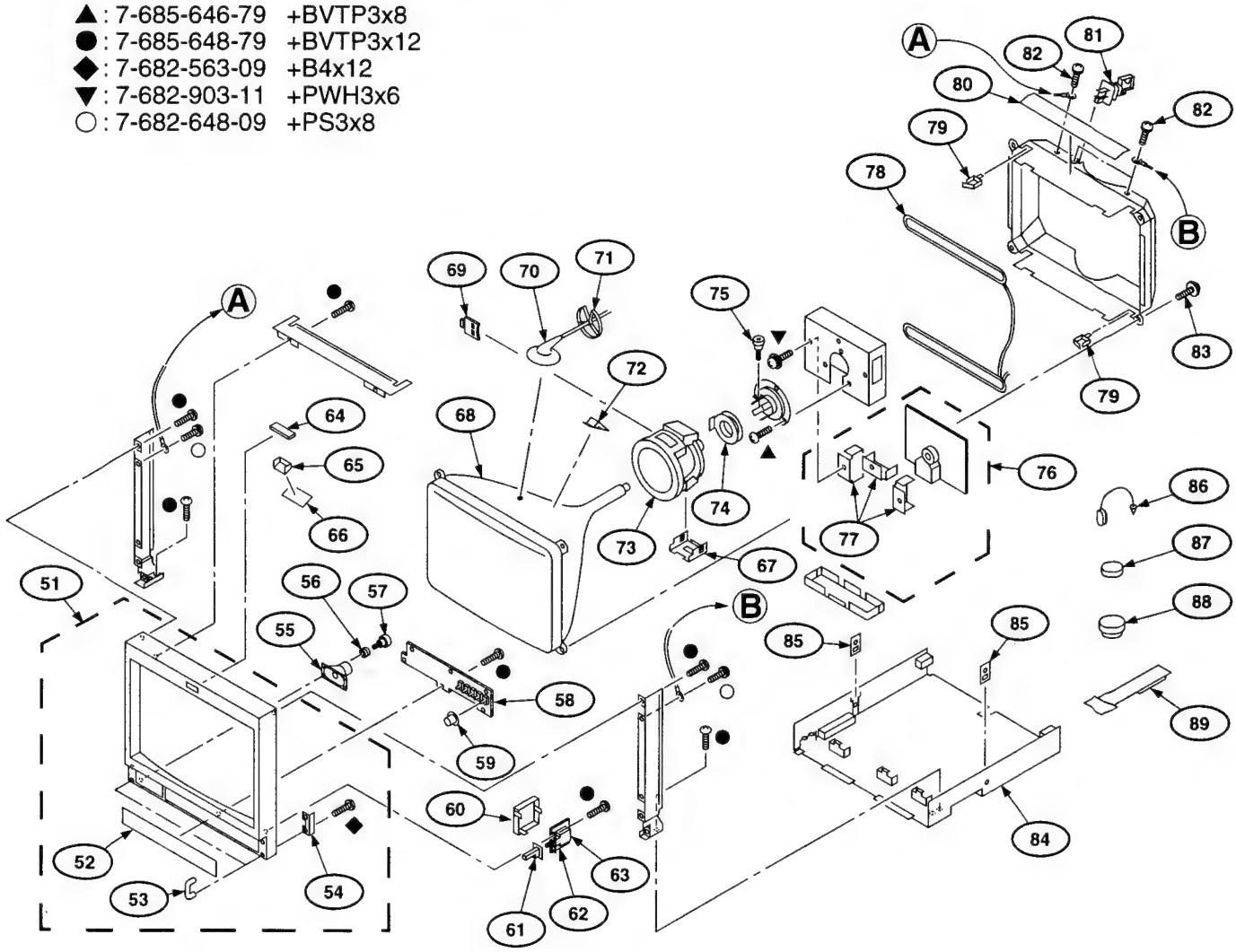
▲ : 7-685-646-79 +BVTP3x8
● : 7-685-648-79 +BVTP3x12
■ : 7-685-663-79 +BVTP4x16
▽ : 7-682-548-09 +P3x8
□ : 7-685-881-09 +BVTT4x8
◇ : 7-682-661-01 +PS4x8
★ : 7-682-955-09 +PSW3x30
⬟ : 7-685-883-09 +BVTT4x12



REF NO.		PART NO.	DESCRIPTION	REMARK
1		X-4034-663-1	COVER ASSY,TOP	
2		4-391-825-01	RIVET, NYLON	
3		4-847-802-11	SCREW (OS), CASE, CLAW	
4	*	4-046-391-01	BRACKET, FITTING	
5	*	4-052-203-01	BRACKET, P PC BOARD	
6	⚠	1-453-108-11	DC BLOCK, HIGH BOLTAGE	
7		4-373-137-01	CAP (Z), RUBBER	
8	*	A-1135-899-A	P COMPLETE PWB	
9	*	A-1298-514-A	A COMPLETE PWB	
10	⚠	1-453-204-11	TRANSFORMER ASSY, FLYBACK	
11	*	4-043-690-01	BRACKET, MAIN	
12	*	A-1316-320-A	G COMPLETE PWB	
13	*	X-4033-346-1	HEAT SINK ASSY (G)	
14	⚠	1-576-231-11	FUSE (H.B.C.) 4A/250V	
15	*	4-043-689-01	BRACKET, G	
16	*	1-694-333-11	Q BOARD, TERMINAL I/O	
17	*	4-043-688-71	PANEL, CONNECTOR	
18		1-763-182-11	FAN, DC (WITH SENSOR)	
19		4-064-820-01	COVER, REAR	
20	*	1-900-234-61	CONNECTOR ASSY, MINI MICRO 3P	

8-2. PICTURE TUBE BLOCK (14inch)

▲ : 7-685-646-79 +BVTP3x8
● : 7-685-648-79 +BVTP3x12
◆ : 7-682-563-09 +B4x12
▼ : 7-682-903-11 +PWH3x6
○ : 7-682-648-09 +PS3x8

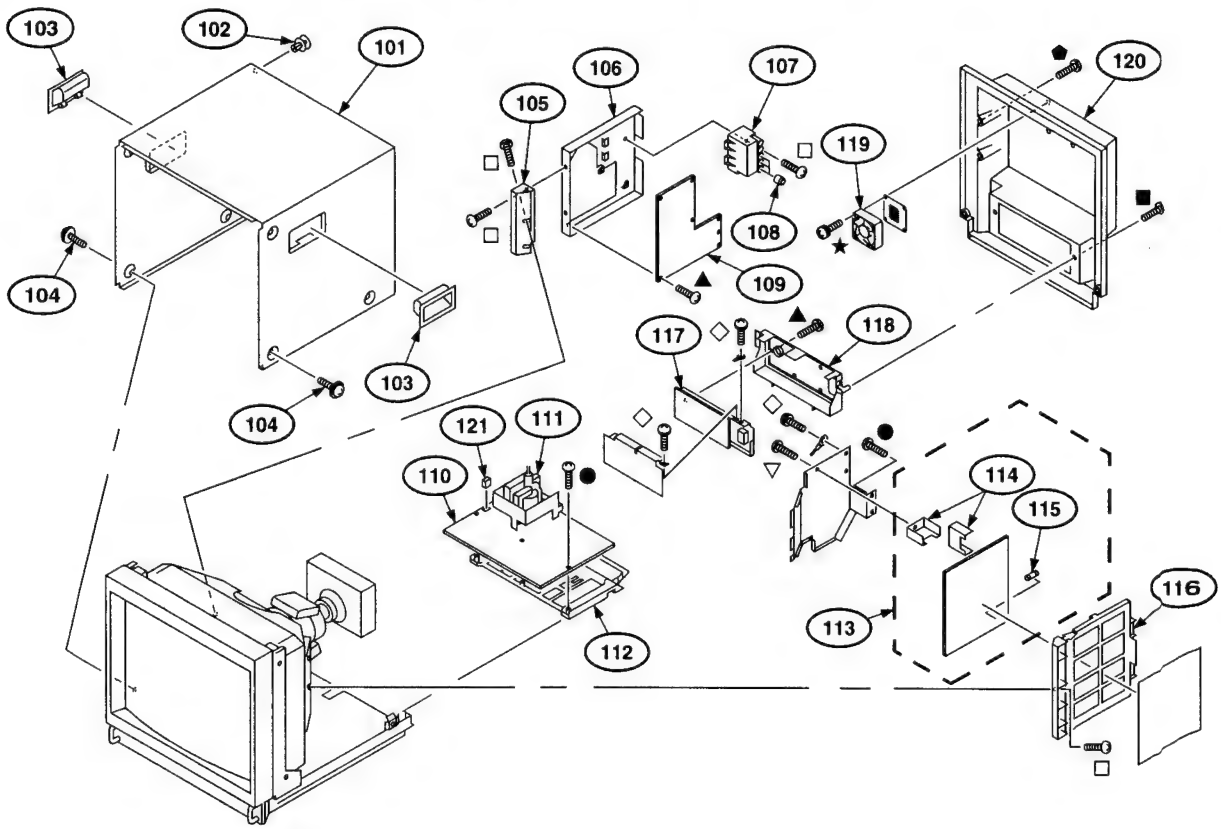


REF NO.		PART NO.	DESCRIPTION	REMARK
51		X-4034-708-1	BEZEL ASSY	
52	*	4-057-975-31	LABEL, CONTROL	
53		4-052-200-01	HANDLE, PROTECTOR	
54	*	4-043-679-01	REINFORCEMENT, HANDLE	
55		1-544-063-12	SPEAKER	
56	*	4-379-189-01	CUSHION, SPEAKER	
57		4-379-192-01	SCREW, TAPPING, STEP	
58	*	A-1372-340-A	H MOUNTED PWB	
59		4-043-802-02	KNOB, CONTROL	
60		4-043-681-01	COVER, AC SWITCH	
61		4-043-683-01	BUTTON, POWER SWITCH	
62	*	A-1388-195-A	J MOUNTED PWB	
63		1-692-921-11	SWITCH, PUSH (AC POWER)	
64	*	A-1390-736-A	X MOUNTED PWB	
65	*	4-043-682-01	REFLECTOR, LED	
66		4-044-606-01	CUSHION, TALLY	
67		4-053-410-01	SHIELD, DY	
68	⚠	8-738-335-05	CRT 14MT3 (PVM)	
69		X-2105-533-1	PLATE ASSY, CORRECTION, TLH	
70	⚠	1-526-981-81	CAP ASSY, HIGH-BOLTAGE	

REF NO.		PART NO.	DESCRIPTION	REMARK
71		3-704-372-01	HOLDER, HV CABLE	
72		3-703-961-01	SPACER, DY	
73	⚠	8-451-473-11	DY Y14MPDT	
74		8-453-002-11	NA3011(M)	
75		4-041-627-01	SCREW (M4x20), HEXAGON HEAD	
76	*	A-1335-088-A	C COMPLETE PWB	
77	*	X-4033-345-1	ASSY, HEAT SINK (C)	
78	⚠	1-426-442-21	COIL, DEMAGNETIZATION	
79	*	4-316-015-00	HOLDER, WIRE	
80		4-391-833-01	CLOTH, PROTECTION	
81		4-033-681-01	HOLDER, LEAD	
82		4-389-025-01	SCREW (M4) (EXT TOOTH WASHER)	
83		4-365-808-01	SCREW (5), TAPPING	
84		X-4035-678-1	CABINET ASSY, BOTTOM	
85		4-042-608-01	NUT, PLATE	
86		4-308-870-00	CLIP, LEAD WIRE	
87		1-452-032-00	MAGNET, DISC	
88		1-452-094-00	MAGNET, ROTATABLE DISK:15mmØ	
89		4-051-736-21	PIECE A(90), CONV. CORRECT	

8-3. CHASSIS BLOCK (20inch)

▲ : 7-685-646-79 +BVTP3x8
● : 7-685-648-79 +BVTP3x12
■ : 7-685-663-79 +BVTP4x16
▽ : 7-682-548-09 +P3x8
□ : 7-685-881-09 +BVTT4x8
◇ : 7-682-661-01 +PS4x8
★ : 7-682-955-09 +PSW3x30
⬟ : 7-685-883-09 +BVTT4x12

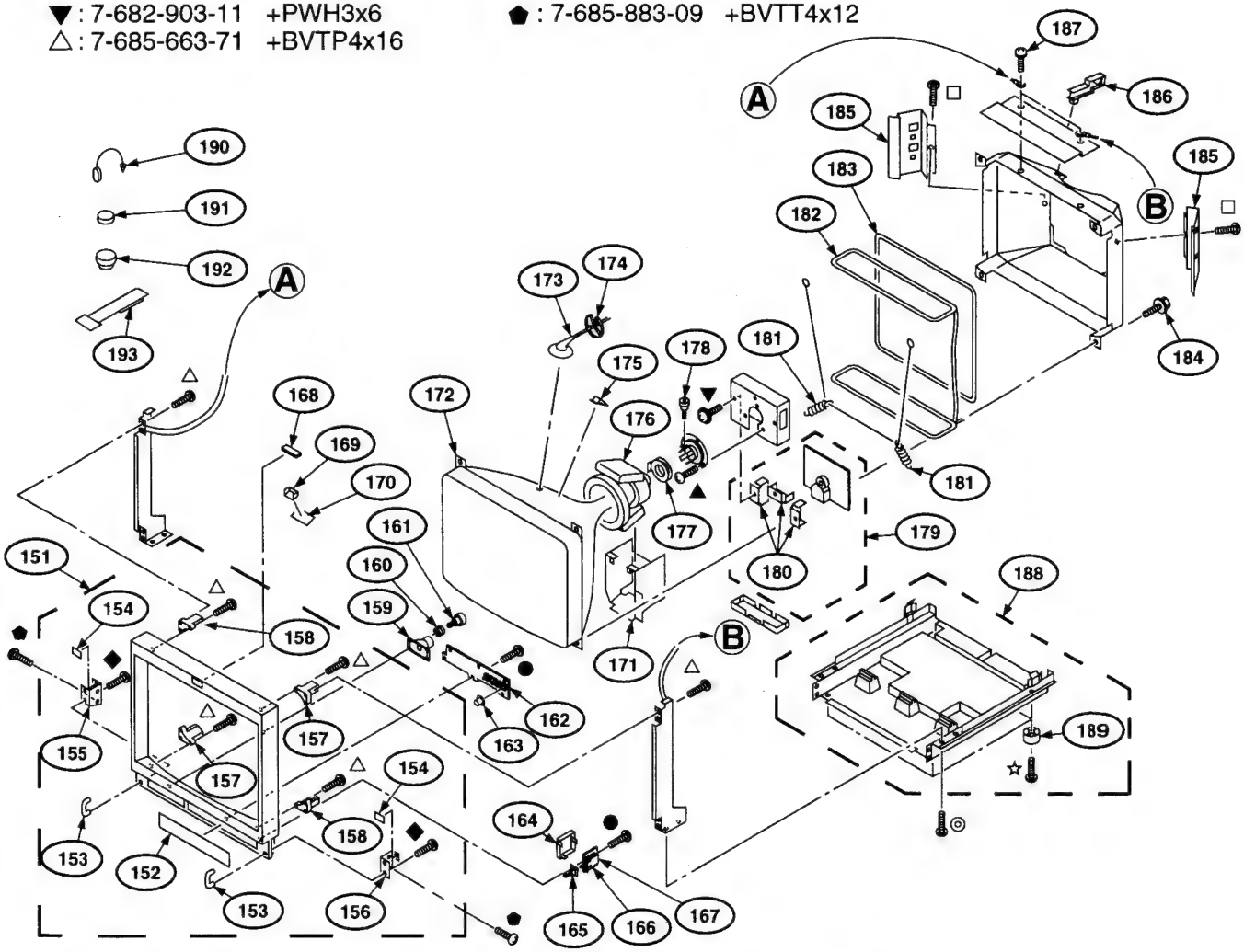


REF NO.		PART NO.	DESCRIPTION	REMARK
101		4-057-973-31	COVER, TOP	
102		4-391-825-01	RIVET, NYLON	
103		4-043-825-01	HANDLE	
104		4-847-802-11	SCREW (OS), CASE, CLAW	
105	*	4-046-391-01	BRACKET, FITTING	
106	*	4-052-203-01	BRACKET P PC BOARD	
107	⚠	1-453-108-11	DC BLOCK HIGH-BOLTAGE	
108		4-373-137-01	CAP (Z), RUBBER	
109	*	A-1195-119-A	P COMPLETE PWB	
110	*	A-1298-515-A	A COMPLETE PWB	

REF NO.		PART NO.	DESCRIPTION	REMARK
111	⚠	1-453-204-11	TRANSFORMER ASSY, FLYBACK	
112	*	4-043-690-01	BRACKET, MAIN	
113	*	A-1316-320-A	G COMPLETE PWB	
114	*	X-4033-346-1	HEAT SINK ASSY (G)	
115	⚠	1-576-231-11	FUSE (H.B.C.) 4A/250V	
116	*	4-043-689-01	BRACKET, G	
117	*	1-694-333-11	Q BOARD, TERMINAL I/O	
118	*	4-043-688-71	PANEL, CONNECTOR	
119		1-763-182-11	FAN, DC (WITH SENSOR)	
120		4-064-821-01	COVER, REAR	
121	*	1-900-234-61	CONNECTOR ASSY, MINI MICRO 3P	

8-4. PICTURE TUBE BLOCK (20inch)

▲ : 7-685-646-79 +BVTP3x8
● : 7-685-648-79 +BVTP3x12
◆ : 7-682-563-09 +B4x12
▼ : 7-682-903-11 +PWH3x6
△ : 7-685-663-71 +BVTP4x16
□ : 7-685-881-09 +BVTT4x8
☆ : 7-685-664-79 +PTP4x20
◎ : 7-685-661-14 +BVTP4x12
⬟ : 7-685-883-09 +BVTT4x12



REF NO.		PART NO.	DESCRIPTION	REMARK
151		X-4034-707-1	BEZEL ASSY	
152	*	4-057-975-31	LABEL, CONTROL	
153		4-052-200-01	HANDLE, PROTECTOR	
154	*	4-043-797-01	PLATE, BLIND	
155	*	4-043-669-01	REINFORCEMENT (L), HANDLE	
156	*	4-043-670-01	REINFORCEMENT (R), HANDLE	
157	*	4-043-672-01	BRACKET (A), CRT	
158	*	4-043-673-01	BRACKET (B), CRT	
159		1-544-063-12	SPEAKER	
160	*	4-379-189-01	CUSHION, SPEAKER	
161		4-379-192-01	SCREW, TAPPING, STEP	
162	*	A-1372-340-A	H MOUNTED TWB	
163		4-043-802-02	KNOB, CONTROL	
164		4-043-681-01	COVER, AC SWITCH	
165		4-043-683-01	BUTTON, POWER SWITCH	
166	*	A-1388-195-A	J MOUNTED PWB	
167		1-692-921-11	SWITCH, PUSH (AC POWER)	
168	*	A-1390-736-A	X MOUNTED PWB	
169	*	4-043-671-01	REFLECTOR, LED	
170		4-044-606-01	CUSHION, TALLY	
171		4-052-782-01	SHIELD, DY	
172	⚠	8-736-381-05	CRT 20MT3 (PVM)	

REF NO.		PART NO.	DESCRIPTION	REMARK
173	⚠	1-526-981-81	CAP ASSY, HIGH-VOLTAGE	
174		3-704-372-01	HOLDER, HV CABLE	
175		4-040-897-01	SPACER, DY	
176	⚠	8-451-432-51	DY Y20SPH2-M5	
177		8-453-002-11	NA3011(M)	
178		4-041-627-01	SCREW (M4x20), HEXAGON HEAD	
179	*	A-1335-087-A	C COMPLETE PWB	
180	*	X-4033-345-1	ASSY, HEAT SINK (C)	
181		4-303-774-XX	SPRING	
182	⚠	1-426-505-11	COIL, DEMAGNETIZATION	
183	⚠	1-411-657-11	COIL, LANDING CORRECTION	
184		4-365-808-01	SCREW (5), TAPPING	
185		X-4391-825-1	HOOK ASSY, F	
186	*	4-387-284-01	HOLDER, LED	
187		4-389-025-01	SCREW (M4) (EXT TOOTH WASHER)	
188	*	X-4035-679-1	CABINET ASSY, BOTTOM	
189		4-901-947-01	LEG	
190		4-308-870-00	CLIP, LEAD WIRE	
191		1-452-032-00	MAGNET, DISC	
192		1-452-094-00	MAGNET, ROTATABLE DISK:15mmØ	
193		4-051-736-21	PIECE A(90), CONV. CORRECT	

SECTION 9
ELECTRICAL PARTS LIST

A

NOTE :

The components identified marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

CAPACITORS
- PF : μμF

When indicating parts by reference number, please include the board name.

REF NO.	PART NO.	DESCRIPTION			REMARK
	* A-1298-514-A	A COMPL (14inch)			
		**********			
	* A-1298-515-A	A COMPL (20inch)			
		**********			
	1-540-044-11	SOCKET, IC			
	* 4-061-490-01	CAP, VCP			
	4-382-854-01	SCREW (M3X8), P, SW(+)			
	7-322-065-19	RUBBER, SILICON RTV(KE490W)			
	7-685-648-79	SCREW +BVTP 3X12 TYPE2IT-3			
		<CAPACITOR>			
C1	1-104-665-11	ELECT	100MF	20%	25V
C2	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4	1-126-396-11	ELECT CHIP	47MF	20%	16V
C5	1-104-665-11	ELECT	100MF	20%	25V
C6	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C7	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C8	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C10	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C11	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C12	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C13	1-126-960-11	ELECT	1MF	20%	50V
C14	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C15	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C17	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C18	1-126-967-11	ELECT	47MF	20%	16V
C19	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C23	1-126-961-11	ELECT	2.2MF	20%	50V
C30	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C33	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C34	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C35	1-126-204-11	ELECT CHIP	47MF	20%	16V
C36	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C48	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C49	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C110	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C112	1-126-933-11	ELECT	100MF	20%	16V
C115	1-126-933-11	ELECT	100MF	20%	16V
C117	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C700	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C703	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C1001	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1002	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1003	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1004	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1005	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1006	1-126-394-11	ELECT CHIP	10MF	20%	16V
C1007	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1008	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1009	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1010	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1011	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1013	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1014	1-126-394-11	ELECT CHIP	10MF	20%	16V
C1015	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1016	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1017	1-126-394-11	ELECT CHIP	10MF	20%	16V
C1019	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1021	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1022	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1023	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1024	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1027	1-126-394-11	ELECT CHIP	10MF	20%	16V
C1028	1-126-394-11	ELECT CHIP	10MF	20%	16V
C1029	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C1030	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1031	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1032	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1033	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1034	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1035	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1036	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1037	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C1038	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1039	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C1040	1-126-394-11	ELECT CHIP	10MF	20%	16V
C1041	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C1042	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1043	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1044	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1045	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1046	1-126-394-11	ELECT CHIP	10MF	20%	16V

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REF NO.	PART NO.	DESCRIPTION			REMARK
C1047	1-126-394-11	ELECT CHIP	10MF	20%	16V
C1048	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C1049	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1050	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1051	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1052	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1053	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1054	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1055	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C1056	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1057	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1058	1-164-005-11	CERAMIC CHIP	0.47MF		25V
C1059	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1060	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1061	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1062	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1063	1-164-005-11	CERAMIC CHIP	0.47MF		25V
C1064	1-126-935-11	ELECT	470MF	20%	16V
C1065	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1066	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1067	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1068	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1069	1-126-397-11	ELECT CHIP	33MF	20%	25V
C1070	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1071	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1072	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1073	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1074	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1075	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1076	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1077	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1078	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C1079	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1080	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1081	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1082	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1083	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1084	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1085	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1086	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1087	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1088	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C1089	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C1090	1-163-989-11	CERAMIC CHIP	0.033MF	10%	25V
C1091	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1092	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1093	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C1094	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C1095	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1096	1-163-989-11	CERAMIC CHIP	0.033MF	10%	25V
C1097	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1098	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1100	1-163-989-11	CERAMIC CHIP	0.033MF	10%	25V
C1101	1-164-489-11	CERAMIC CHIP	0.22MF	10%	16V
C1102	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1103	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1107	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C1112	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1113	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1114	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1115	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1116	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1117	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1118	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1119	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1120	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1121	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1122	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1123	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C1124	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1125	1-128-594-11	ELECT CHIP	1MF	20%	50V
C1126	1-136-173-00	FILM	0.47MF	5%	50V
C1127	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1128	1-128-235-11	ELECT CHIP	0.47MF	20%	50V (14inch)
C1128	1-126-956-51	ELECT CHIP	0.1MF	20%	50V (20inch)
C1129	1-126-393-11	ELECT CHIP	33MF	20%	10V
C1130	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C1131	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C1132	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C1133	1-128-057-11	ELECT	330MF	20%	6.3V
C1134	1-128-057-11	ELECT	330MF	20%	6.3V
C1135	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1136	1-126-396-11	ELECT CHIP	47MF	20%	16V
C1137	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C1138	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C2001	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2002	1-126-940-11	ELECT	330MF	20%	25V
C2003	1-126-396-11	ELECT CHIP	47MF	20%	16V
C2004	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2005	1-126-963-11	ELECT	4.7MF	20%	50V
C2006	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C2007	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2008	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C2009	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C2010	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C2011	1-104-563-11	FILM CHIP	0.1MF	5%	16V
C2012	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C2013	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C2014	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2015	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C2016	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2017	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2018	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C2019	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2020	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C2021	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C2022	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C2023	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2024	1-104-557-11	FILM CHIP	0.033MF	5%	16V
C2025	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2026	1-104-563-11	FILM CHIP	0.1MF	5%	16V
C2027	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C2028	1-104-551-11	FILM CHIP	0.01MF	5%	16V
C2029	1-126-401-11	ELECT CHIP	1MF	20%	50V
C2030	1-104-559-11	FILM CHIP	0.047MF	5%	16V
C2031	1-126-401-11	ELECT CHIP	1MF	20%	50V

REF NO.	PART NO.	DESCRIPTION			REMARK
C2032	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2033	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2034	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C2035	1-126-967-11	ELECT	47MF	20%	16V
C2036	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2037	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2038	1-126-401-11	ELECT CHIP	1MF	20%	50V
C2039	1-104-562-11	FILM CHIP	0.082MF	5%	16V
C2040	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C2041	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C2042	1-104-555-11	FILM CHIP	0.022MF	5%	16V
C2043	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C2044	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C2045	1-104-540-11	FILM CHIP	0.0012MF	5%	50V
C2046	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C2047	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C2048	1-115-419-11	CERAMIC CHIP	3300PF	5%	25V
C2049	1-164-346-11	CERAMIC CHIP	1MF		16V
C2050	1-163-023-00	CERAMIC CHIP	0.015MF	10%	50V
C2051	1-104-540-11	FILM CHIP	0.0012MF	5%	50V
C2052	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C2053	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C2054	1-126-396-11	ELECT CHIP	47MF	20%	16V
C2055	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2056	1-126-396-11	ELECT CHIP	47MF	20%	16V
C2057	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2058	1-164-346-11	CERAMIC CHIP	1MF		16V
C2059	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C2061	1-126-601-11	ELECT CHIP	2.2MF	20%	50V
C2062	1-126-391-11	ELECT CHIP	47MF	20%	6.3V
C2063	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C2064	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C2065	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C2066	1-104-665-11	ELECT	100MF	20%	25V
C2067	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C2068	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C2069	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C2070	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2071	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C2072	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C2073	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C2074	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C2075	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C2077	1-104-555-11	FILM CHIP	0.022MF	5%	16V
C2078	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2079	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3001	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3002	1-104-664-11	ELECT	47MF	20%	25V
C3003	1-104-665-11	ELECT	100MF	20%	25V
C3004	1-126-767-11	ELECT	1000MF	20%	16V
C3005	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3006	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3007	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3008	1-126-394-11	ELECT CHIP	10MF	20%	16V
C3009	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C3010	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C3011	1-126-394-11	ELECT CHIP	10MF	20%	16V
C3012	1-126-603-11	ELECT CHIP	4.7MF	20%	35V

REF NO.	PART NO.	DESCRIPTION			REMARK
C3013	1-137-353-11	MYLAR	0.047MF	10%	100V
C3014	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3015	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3019	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3020	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3023	1-104-666-11	ELECT	220MF	20%	25V
C3024	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3025	1-136-561-11	FILM	0.0068MF	10%	630V (14inch)
C3025	1-129-710-51	FILM	0.0047MF	10%	630V (20inch)
C3026	1-126-395-11	ELECT CHIP	22MF	20%	16V
C3027	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3028	1-163-038-91	CERAMIC CHIP	0.1MF	25V	
C3029	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C3030	1-164-182-11	CERAMIC CHIP	0.0033MF	10%	50V
C3031	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3032	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C3033	1-126-401-11	ELECT CHIP	1MF	20%	50V
C3034	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3035	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C3036	1-126-401-11	ELECT CHIP	1MF	20%	50V
C3037	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C3038	1-126-394-11	ELECT CHIP	10MF	20%	16V
C3039	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3040	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3041	1-126-401-11	ELECT CHIP	1MF	20%	50V
C3042	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3043	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C3044	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3045	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C3046	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3047	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3048	1-106-383-00	MYLAR	0.047MF	10%	200V
C3049	1-102-030-00	CERAMIC	330PF	10%	500V
C3050	1-123-024-21	ELECT	33MF		160V
C3051	1-136-173-00	FILM	0.47MF	5%	50V
C3052	1-163-023-00	CERAMIC CHIP	0.015MF	10%	50V
C3053	1-102-030-00	CERAMIC	330P	10%	500V
C3054	1-137-353-11	MYLAR	0.047MF	10%	100V
C3055	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3056	1-106-359-00	MYLAR	0.0047MF	10%	100V
C3057	1-115-524-11	FILM	1.5MF	5%	200V
C3058	1-106-371-00	MYLAR	0.015MF	99%	200V
C3059	1-104-489-11	FILM	820PF	3%	1.5KV
C3060	1-136-044-00	FILM	0.0017MF	3%	1.5KV
C3061	1-162-114-00	CERAMIC	0.0047MF		2KV
C3062	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C3064	1-126-394-11	ELECT CHIP	10MF	20%	16V
C3066	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3067	1-107-364-11	MYLAR	0.01MF	10%	200V
C3068	1-109-889-11	ELECT	1MF	20%	50V
C3069	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3070	1-130-879-11	FILM	0.047MF	5%	50V
C3071	1-130-879-11	FILM	0.047MF	5%	50V
C3073	1-104-665-11	ELECT	100MF	20%	25V
C3074	1-126-933-11	ELECT	100MF	20%	16V
C3075	1-104-661-91	ELECT	330MF	20%	16V
C3076	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V (20inch)
C3077	1-126-204-11	ELECT CHIP	47MF	20%	16V (20inch)

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REF NO.	PART NO.	DESCRIPTION			REMARK
C3078	1-126-204-11	ELECT CHIP	47MF	20%	16V (20inch)
C3079	1-136-165-11	FILM	0.1MF	5%	50V (20inch)
C3080	1-124-779-00	ELECT CHIP	10MF	20%	16V
C3081	1-106-343-00	MYLAR	0.001MF	10%	100V
C3082	1-104-661-91	ELECT	330MF	20%	16V
C3083	1-106-363-00	MYLAR	0.0047MF		200V
C3085	1-109-953-11	ELECT	2.2MF	20%	50V
C3087	1-126-204-11	ELECT CHIP	47MF	20%	16V
C3088	1-107-367-11	FILM	0.033MF	10%	200V
C3089	1-107-362-11	FILM	0.0068MF		200V
C3090	1-126-396-11	ELECT CHIP	47MF	20%	16V
C3091	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C3092	1-126-963-11	ELECT	4.7MF	20%	50V
C3093	1-162-133-00	CERAMIC	390PF	10%	2KV (14inch)
C4001	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C4002	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C4003	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C4004	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C4005	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C4006	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C4007	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C4008	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C4009	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C4010	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C4011	1-126-395-11	ELECT CHIP	22MF	20%	16V
C4012	1-163-002-11	CERAMIC CHIP	270PF	10%	50V
C4013	1-109-953-11	ELECT	2.2MF	20%	50V
C4015	1-126-204-11	ELECT CHIP	47MF	20%	16V
C4016	1-126-963-11	ELECT	4.7MF	20%	50V
C4017	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C4023	1-126-204-11	ELECT CHIP	47MF	20%	16V
C4024	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4027	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4028	1-126-205-11	ELECT CHIP	47MF	20%	6.3V
C4029	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4030	1-126-204-11	ELECT CHIP	47MF	20%	16V
C4031	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4033	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C4035	1-109-889-11	ELECT	1MF	20%	50V
C4036	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4037	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C4038	1-126-395-11	ELECT CHIP	22MF	20%	16V
C4039	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4040	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4041	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4042	1-126-204-11	ELECT CHIP	47MF	20%	16V
C4043	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4044	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C4045	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C4046	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C4047	1-128-235-11	ELECT CHIP	0.47MF	20%	50V
C4048	1-164-654-11	CERAMIC CHIP	0.0068MF	10%	50V
C4052	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C4053	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C4054	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C4055	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4056	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C4057	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C4059	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4060	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C4061	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C4062	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C4063	1-126-924-11	ELECT	330MF	20%	6.3V (20inch)
C5001	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C5002	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C5003	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5004	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C5005	1-126-197-11	ELECT CHIP	10MF	20%	50V
C5006	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5007	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5008	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5009	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5010	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C5011	1-126-197-11	ELECT CHIP	10MF	20%	50V
C5012	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C5013	1-126-197-11	ELECT CHIP	10MF	20%	50V
C5014	1-164-298-11	CERAMIC CHIP	0.15MF	10%	25V
C5015	1-164-298-11	CERAMIC CHIP	0.15MF	10%	25V
C5016	1-164-298-11	CERAMIC CHIP	0.15MF	10%	25V
C5017	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5018	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5019	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C5020	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C5021	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C5022	1-124-779-00	ELECT CHIP	10MF	20%	16V
C5023	1-164-298-11	CERAMIC CHIP	0.15MF	10%	25V
C5024	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5025	1-164-298-11	CERAMIC CHIP	0.15MF	10%	25V
C5026	1-124-779-00	ELECT CHIP	10MF	20%	16V
C5027	1-124-779-00	ELECT CHIP	10MF	20%	16V
C5028	1-164-298-11	CERAMIC CHIP	0.15MF	10%	25V
C5029	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C5030	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5031	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5032	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5033	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C5034	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5035	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5036	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5037	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5038	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C5040	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5041	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5042	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5043	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5044	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5045	1-126-204-11	ELECT CHIP	47MF	20%	16V
C5046	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C5047	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C5048	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C5049	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C5050	1-163-241-11	CERAMIC CHIP	39PF	5%	50V (14inch)
C5050	1-163-251-11	CERAMIC CHIP	100PF	10%	50V (20inch)
C5051	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C5052	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5053	1-126-204-11	ELECT CHIP	47MF	20%	16V

REF NO.	PART NO.	DESCRIPTION			REMARK
C5054	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C5055	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C5056	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C5058	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C5059	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C5060	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5061	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5062	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5063	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5064	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5065	1-104-661-91	ELECT	330MF	20%	16V
C5068	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C5069	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C5070	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C5072	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C6001	1-164-346-11	CERAMIC CHIP	1MF		16V
C7001	1-107-636-11	ELECT	10MF	20%	160V
C7002	1-104-989-91	FILM	0.0022MF	10%	200V
C7003	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C7004	1-130-479-00	MYLAR	0.0047MF	5%	50V
C7005	1-107-823-11	CERAMIC CHIP	0.47MF	10%	16V
C7006	1-163-002-11	CERAMIC CHIP	270P	10%	50V
C7007	1-108-638-11	FILM	0.1	10%	100V
		<CONNECTOR>			
CN1	* 1-573-964-11	PIN, CONNECTOR (PC BOARD) 6P			
CN2	1-695-915-11	TAB (CONTACT)			
CN3	1-564-510-11	PLUG, CONNECTOR 7P			
CN4	* 1-564-514-11	PLUG, CONNECTOR 11P			
CN5	1-564-511-11	PLUG, CONNECTOR 8P			
CN1002	* 1-564-512-11	PLUG, CONNECTOR 9P			
CN2001	* 1-564-508-11	PLUG, CONNECTOR 5P			
CN2002	* 1-564-506-11	PLUG, CONNECTOR 3P			
CN2003	* 1-564-506-11	PLUG, CONNECTOR 3P			
CN2004	* 1-564-516-11	PLUG, CONNECTOR 13P			
CN3001	* 1-564-506-11	PLUG, CONNECTOR 3P			
CN3002	* 1-564-512-11	PLUG, CONNECTOR 9P			
CN3005	* 1-564-509-11	PLUG, CONNECTOR 6P			
CN3006	* 1-691-096-11	PIN, CONNECTOR (PC BOARD) 8P			
CN3007	1-695-915-11	TAB (CONTACT)			
CN3008	* 1-564-509-11	PLUG, CONNECTOR 6P			
CN3009	1-564-513-11	PLUG, CONNECTOR 10P			
CN3010	* 1-564-506-11	PLUG, CONNECTOR 3P (20inch)			
CN4001	1-764-822-11	CONNECTOR, BOARD TO BOARD 18P			
CN4002	* 1-564-511-61	PLUG, CONNECTOR 8P			
CN4003	1-764-822-11	CONNECTOR, BOARD TO BOARD 18P			
CN7001	* 1-564-506-11	PLUG, CONNECTOR 3P			
		<DIODE>			
D1	8-719-977-32	DIODE DTZ11B			
D2	8-719-800-76	DIODE 1SS226			
D3	8-719-404-49	DIODE MA111			
D9	8-719-159-13	DIODE RD5.1SB3-T2			
D10	8-719-911-19	DIODE 1SS119-25			
D700	8-719-404-49	DIODE MA111			
D701	8-719-404-49	DIODE MA111			
D1001	8-719-404-49	DIODE MA111			

REF NO.	PART NO.	DESCRIPTION	REMARK
D1002	8-719-404-49	DIODE MA111	
D1004	8-719-158-53	DIODE RD13SB2	
D1005	8-719-158-20	DIODE RD6.2SB1	
D1007	8-719-404-49	DIODE MA111	
D1008	8-719-404-49	DIODE MA111	
D1009	8-719-404-49	DIODE MA111	
D1010	8-719-158-20	DIODE RD6.2SB1	
D1011	8-719-158-53	DIODE RD13SB2	
D2001	8-719-404-49	DIODE MA111	
D2002	8-719-045-70	DIODE 1SV230TPH3	
D3001	8-719-977-46	DIODE DTZ13C	
D3002	8-719-302-43	DIODE EL1Z	
D3003	8-719-404-49	DIODE MA111	
D3004	8-719-404-49	DIODE MA111	
D3005	8-719-404-49	DIODE MA111	
D3006	8-719-158-49	DIODE RD12SB2	
D3007	8-719-404-49	DIODE MA111	
D3008	8-719-158-49	DIODE RD12SB2	
D3012	8-719-110-46	DIODE RD16ESB3	
D3013	8-719-911-19	DIODE 1SS119-25	
D3014	8-719-988-11	DIODE FE3D	
D3015	8-719-988-11	DIODE FE3D	
D3016	8-719-975-77	DIODE SB340	
D3017	8-719-028-72	DIODE RGP02-17EL-6433	
D3019	8-719-404-49	DIODE MA111	
D3021	8-719-158-49	DIODE RD12SB2	
D3022	8-719-158-49	DIODE RD12SB2	
D3023	8-719-404-49	DIODE MA111	
D3024	8-719-404-49	DIODE MA111	
D3025	8-719-404-49	DIODE MA111	
D3026	8-719-404-49	DIODE MA111	
D3028	8-719-404-49	DIODE MA111	
D3029	8-719-404-49	DIODE MA111	
D3031	8-719-158-40	DIODE RD10SB1	
D3032	8-719-911-19	DIODE 1SS119-25	
D3033	8-719-037-53	DIODE RD27SB-T1	
D3034	8-719-037-53	DIODE RD27SB-T1	
D3035	8-719-404-49	DIODE MA111	
D4001	8-719-404-49	DIODE MA111	
D4002	8-719-404-49	DIODE MA111	
D4003	8-719-404-49	DIODE MA111	
D4004	8-719-404-49	DIODE MA111	
D4005	8-719-404-49	DIODE MA111	
D4006	8-719-404-49	DIODE MA111	
D4007	8-719-404-49	DIODE MA111	
D4008	8-719-404-49	DIODE MA111	
D4009	8-719-404-49	DIODE MA111	
D4010	8-719-404-49	DIODE MA111	
D4017	8-719-404-49	DIODE MA111	
D4018	8-719-404-49	DIODE MA111	
D4019	8-719-404-49	DIODE MA111	
D4046	8-719-404-49	DIODE MA111	
D4047	8-719-404-49	DIODE MA111	
D4048	8-719-404-49	DIODE MA111	
D4049	8-719-404-49	DIODE MA111	
D4050	8-719-404-49	DIODE MA111	
D4051	8-719-404-49	DIODE MA111	
D4052	8-719-404-49	DIODE MA111	

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REF NO.	PART NO.	DESCRIPTION	REMARK
D5001	8-719-404-49	DIODE MA111	
D5005	8-719-404-49	DIODE MA111	
D5006	8-719-404-49	DIODE MA111	
D5007	8-719-404-49	DIODE MA111	
D5008	8-719-404-49	DIODE MA111	
D5009	8-719-404-49	DIODE MA111	
D5010	8-719-404-49	DIODE MA111	
D5011	8-719-404-49	DIODE MA111	
D5012	8-719-404-49	DIODE MA111	
D5013	8-719-404-49	DIODE MA111	
D5014	8-719-404-49	DIODE MA111	
D5015	8-719-404-49	DIODE MA111	
D5016	8-719-404-49	DIODE MA111	
D5017	8-719-158-53	DIODE RD13SB2	
D5018	8-719-404-49	DIODE MA111	
D5019	8-719-404-49	DIODE MA111	
D6001	8-719-404-49	DIODE MA111	
D6010	8-719-404-49	DIODE MA111	
D7001	8-719-200-02	DIODE 10E-2	
D7002	8-719-157-89	DIODE RD2.7SB1	
D7003	8-719-110-31	DIODE RD12ESB2	
D7004	8-719-911-19	DIODE 1SS119-25	
		<DELAY LINE>	
DL1001	1-415-808-11	DELAY LINE	
DL1002	1-415-808-11	DELAY LINE	
DL1003	1-415-808-11	DELAY LINE	
DL1004	1-415-809-11	DELAY LINE	
DL1005	1-415-808-11	DELAY LINE	
		<FERRITE BEAD>	
FB3001	1-410-396-41	FERRITE 0.45UH	
FB3002	1-410-396-41	FERRITE 0.45UH	
FB4001	1-414-234-11	INDUCTOR CHIP 0UH	
FB4002	1-414-234-11	INDUCTOR CHIP 0UH	
FB4003	1-414-234-11	INDUCTOR CHIP 0UH	
FB4004	1-414-234-11	INDUCTOR CHIP 0UH	
FB4005	1-414-234-11	INDUCTOR CHIP 0UH	
FB4006	1-414-234-11	INDUCTOR CHIP 0UH	
FB4007	1-414-234-11	INDUCTOR CHIP 0UH	
FB4008	1-414-234-11	INDUCTOR CHIP 0UH	
FB4009	1-414-234-11	INDUCTOR CHIP 0UH	
FB4010	1-414-234-11	INDUCTOR CHIP 0UH	
FB4011	1-414-234-11	INDUCTOR CHIP 0UH	
FB4012	1-414-234-11	INDUCTOR CHIP 0UH	
FB4013	1-414-234-11	INDUCTOR CHIP 0UH	
FB4014	1-414-234-11	INDUCTOR CHIP 0UH	
FB4015	1-414-234-11	INDUCTOR CHIP 0UH	
FB4016	1-414-234-11	INDUCTOR CHIP 0UH	
FB4017	1-414-234-11	INDUCTOR CHIP 0UH	
FB4018	1-414-234-11	INDUCTOR CHIP 0UH	
FB4019	1-414-234-11	INDUCTOR CHIP 0UH	
		<IC>	
IC1	8-759-009-51	IC MC14538BF	
IC2	8-759-008-82	IC MC14013BF	
IC3	8-759-009-51	IC MC14538BF	
IC4	8-759-009-51	IC MC14538BF	
IC5	8-759-008-79	IC MC14011BF	
IC100	8-759-009-22	IC MC14094BF	
IC1002	8-759-196-70	IC M62358FP-E1	
IC1004	8-752-053-21	IC CXA1211M	
IC1005	8-759-492-19	IC MM1231XFBE	
IC1007	8-752-053-21	IC CXA1211M	
IC1008	8-759-008-67	IC MC14066BF	
IC1009	8-759-008-67	IC MC14066BF	
IC1010	8-752-053-21	IC CXA1211M	
IC1011	8-759-196-70	IC M62358FP-E1	
IC1012	8-759-009-07	IC MC14053BF	
IC1013	8-759-009-07	IC MC14053BF	
IC1014	8-759-502-80	IC LM358M	
IC1015	8-759-492-19	IC MM1231XFBE	
IC1016	8-752-067-05	IC CXA1739S	
IC1018	8-759-502-84	IC LM393M	
IC1019	8-759-239-34	IC TC74HC4538AF	
IC1022	8-752-054-80	IC CXA1521M	
IC1023	8-752-054-80	IC CXA1521M	
IC2001	8-759-701-88	IC NJM7912FA	
IC2002	8-759-701-84	IC NJM7905FA	
IC2003	8-759-535-46	IC HD6473257P10-PHM2	
IC2004	8-759-162-80	IC MM1170BFB	
IC2005	8-759-163-78	IC NM24C04EM8-FL63	
IC2006	8-759-163-78	IC NM24C04EM8-FL63	
IC2007	8-759-367-70	IC MC74HC125AFEL	
IC2008	8-752-065-79	IC CXA1470AM-T6	
IC2009	8-759-100-96	IC UPC4558G2	
IC2010	8-759-158-86	IC CXA8021M-T6	
IC2011	8-759-502-80	IC LM358M	
IC2012	8-759-008-67	IC MC14066BF	
IC2013	8-759-158-84	IC CXA1543M-T6	
IC2014	8-759-262-59	IC UPD6451AGT-632-E2	
IC2015	8-759-196-70	IC M62358FP-E1	
IC2016	8-759-502-84	IC LM393M	
IC2020	8-759-367-69	IC MC74HC74AFEL	
IC3001	8-759-420-04	IC AN5265	
IC3003	8-759-158-82	IC CXA1544M-T6	
IC3004	8-759-008-79	IC MC14011BF	
IC3005	8-759-929-26	IC TL431CPS	
IC3006	8-759-929-26	IC TL431CPS	
IC3007	8-759-502-84	IC LM393M	
IC3008	8-759-502-80	IC LM358M	
IC3009	8-759-803-42	IC LA6500-FA (20inch)	
IC4001	8-759-186-23	IC TC74VHC595F(EL)	
IC4002	8-759-186-23	IC TC74VHC595F(EL)	
IC4003	8-759-009-51	IC MC14538BF	
IC4004	8-759-239-34	IC TC74HC4538AF	
IC4005	8-759-239-34	IC TC74HC4538AF	
IC4006	8-759-424-26	IC MC74HC153FEL	
IC4007	8-759-432-78	IC MM1111XFBE	
IC4008	8-759-209-57	IC TC4S69F(TE85R)	
IC4009	8-759-239-34	IC TC74HC4538AF	
IC4010	8-759-209-57	IC TC4S69F(TE85R)	
IC5001	8-759-239-34	IC TC74HC4538AF	
IC5002	8-759-009-07	IC MC14053BF	

REF NO.	PART NO.	DESCRIPTION	REMARK
IC5003	8-759-060-00	IC BA10324AF	
IC5004	8-759-008-67	IC MC14066BF	
IC5005	8-759-060-00	IC BA10324AF	
IC5006	8-759-060-00	IC BA10324AF	
IC5007	8-759-008-67	IC MC14066BF	
IC5008	8-759-239-34	IC TC74HC4538AF	
IC5009	8-759-180-84	IC TC7W74F	
IC5010	8-759-209-57	IC TC4S69F(TE85R)	
IC5011	8-759-242-64	IC TC4W53F	
IC5012	8-759-242-64	IC TC4W53F	
		<CHIP CONDUCTOR>	
JR5001	1-216-295-91	SHORT	
		<COIL>	
L8	1-410-212-51	INDUCTOR CHIP 47UH	
L10	1-410-199-51	INDUCTOR CHIP 3.9UH	
L2001	1-412-549-00	INDUCTOR 1MMH	
L2002	1-410-203-51	INDUCTOR CHIP 8.2UH	
L3004	1-459-104-00	COIL, DUST CORE	
L3005	1-459-485-00	INDUCTOR 0UH	
L3006	1-459-485-00	INDUCTOR 0UH	
L3007	1-413-059-00	TRANSFORMER, FERRITE (DFT)	
L3009	1-412-547-21	INDUCTOR 680UH	
L3010	1-421-465-00	INDUCTOR 0UH	
L4002	1-410-645-31	INDUCTOR 100UH	
L5001	1-410-209-51	INDUCTOR CHIP 27UH	
L5002	1-410-209-51	INDUCTOR CHIP 27UH	
L5003	1-410-209-51	INDUCTOR CHIP 27UH	
		<NEON LAMP>	
NL3001	1-519-526	LAMP, NEON	
		<TRANSISTOR>	
Q1	8-729-021-82	TRANSISTOR 2SD2396K	
Q2	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3	8-729-216-22	TRANSISTOR 2SA1162-G	
Q5	8-729-216-22	TRANSISTOR 2SA1162-G	
Q7	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q12	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q58	8-729-313-42	TRANSISTOR 2SD1134-C	
Q700	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q701	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q702	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q703	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q704	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q705	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1001	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1002	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1003	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1004	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1005	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1006	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1007	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1008	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1009	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1010	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1011	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1012	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1013	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1014	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1015	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1016	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1017	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1018	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1019	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1020	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1021	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1022	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1023	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1024	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1025	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1026	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1027	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1028	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1029	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1030	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1031	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1032	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1033	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1034	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1035	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1036	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1037	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1038	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1039	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1040	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1041	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1042	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1043	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1044	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1045	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1046	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1047	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1048	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1049	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1050	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1051	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1052	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1053	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1054	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q1056	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q1057	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1058	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1059	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1060	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1061	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1062	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q1063	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1064	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1065	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1066	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q1067	8-729-120-28	TRANSISTOR 2SC1623-L5L6	

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REF NO.	PART NO.	DESCRIPTION	REMARK
Q1068	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q1069	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1070	8-729-216-22	TRANSISTOR 2SA1162-G	
Q2004	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q2005	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q2006	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q2007	8-729-032-47	TRANSISTOR 2SA1741	
Q2008	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3001	8-729-140-96	TRANSISTOR 2SD774-34	
Q3002	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3003	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3004	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3005	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3006	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3007	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3008	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3009	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3010	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3011	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3012	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q3013	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3014	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q3016	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3017	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3024	1-801-806-11	TRANSISTOR DTC144EKA-T146	
Q3029	8-729-820-73	TRANSISTOR 2SC3746	
Q3030	8-729-015-28	TRANSISTOR IRFI9630GS	
Q3031	8-729-821-87	TRANSISTOR 2SD1878-CA	
Q3032	8-729-020-07	TRANSISTOR 2SC4686A(LBSONY)	
Q3033	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3034	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3035	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3036	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3037	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3038	8-729-027-38	TRANSISTOR DTA144EKA-T146	
Q3039	8-729-027-38	TRANSISTOR DTA144EKA-T146	
Q3040	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3041	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q3042	8-729-800-32	TRANSISTOR 2SC2362K-G	
Q3043	8-729-802-71	TRANSISTOR 2SA1407-D	
Q4002	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4003	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4004	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4005	1-801-806-11	TRANSISTOR DTC144EK-T146	
Q4006	8-729-216-22	TRANSISTOR 2SA1162-G	
Q4007	8-729-216-22	TRANSISTOR 2SA1162-G	
Q4008	8-729-216-22	TRANSISTOR 2SA1162-G	
Q4009	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4010	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4011	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4012	8-729-216-22	TRANSISTOR 2SA1162-G	
Q4013	8-729-216-22	TRANSISTOR 2SA1162-G	
Q4014	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4015	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q4016	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5001	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5002	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5003	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5004	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5005	8-729-920-39	TRANSISTOR IMT1US	
Q5006	8-729-920-39	TRANSISTOR IMT1US	
Q5008	8-729-920-39	TRANSISTOR IMT1US	
Q5009	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5010	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5011	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5012	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5013	8-729-907-26	TRANSISTOR IMX1	
Q5014	8-729-907-26	TRANSISTOR IMX1	
Q5015	8-729-907-26	TRANSISTOR IMX1	
Q5016	8-729-216-22	TRANSISTOR 2SA1162-G	
Q5017	8-729-216-22	TRANSISTOR 2SA1162-G	
Q5018	8-729-216-22	TRANSISTOR 2SA1162-G	
Q5019	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5020	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5021	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q5022	8-729-907-26	TRANSISTOR IMX1	
Q5023	8-729-907-26	TRANSISTOR IMX1	
Q5024	8-729-907-26	TRANSISTOR IMX1	
Q5025	8-729-216-22	TRANSISTOR 2SA1162-G	
Q6001	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q6002	1-801-806-11	TRANSISTOR DTC144EKA-T146	

<RESISTOR>

R1	1-216-389-11	METAL OXIDE	1	5%	3W	F
R2	1-247-746-11	CARBON	390	5%	1/2W	
R3	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R4	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R5	1-216-681-11	METAL CHIP	18K	0.50%	1/10W	
R6	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R7	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R8	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R10	1-216-083-00	RES,CHIP	27K	5%	1/10W	
R11	1-216-025-91	RES,CHIP	100	5%	1/10W	
R13	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R14	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R15	1-216-001-00	RES,CHIP	10	5%	1/10W	
R20	1-216-043-91	RES,CHIP	560	5%	1/10W	
R21	1-216-109-00	RES,CHIP	330K	5%	1/10W	
R22	1-216-055-00	RES,CHIP	1.8K	5%	1/10W	
R23	1-216-025-91	RES,CHIP	100	5%	1/10W	
R26	1-216-097-91	RES,CHIP	100K	5%	1/10W	
R27	1-216-097-91	RES,CHIP	100K	5%	1/10W	
R30	1-216-073-00	RES,CHIP	10K	5%	1/10W	
R38	1-216-009-00	RES,CHIP	22	5%	1/10W	
R45	1-216-009-00	RES,CHIP	22	5%	1/10W	
R53	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	
R54	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	
R216	1-216-389-11	METAL OXIDE	1	5%	3W	F
R225	1-249-417-11	CARBON	1K	5%	1/4W	
R700	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W	
R701	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R702	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R703	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R704	1-216-025-91	RES,CHIP	100	5%	1/10W	
R705	1-216-089-91	RES,CHIP	47K	5%	1/10W	
R706	1-216-089-91	RES,CHIP	47K	5%	1/10W	

REF NO.	PART NO.	DESCRIPTION			REMARK
R1001	1-216-033-00	RES,CHIP	220	5%	1/10W
R1002	1-216-033-00	RES,CHIP	220	5%	1/10W
R1008	1-216-025-91	RES,CHIP	100	5%	1/10W
R1009	1-216-009-00	RES,CHIP	22	5%	1/10W
R1011	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1012	1-216-009-00	RES,CHIP	22	5%	1/10W
R1015	1-216-009-00	RES,CHIP	22	5%	1/10W
R1016	1-216-009-00	RES,CHIP	22	5%	1/10W
R1017	1-216-009-00	RES,CHIP	22	5%	1/10W
R1018	1-216-009-00	RES,CHIP	22	5%	1/10W
R1020	1-216-009-00	RES,CHIP	22	5%	1/10W
R1021	1-216-077-00	RES,CHIP	15K	5%	1/10W
R1026	1-216-037-00	RES,CHIP	330	5%	1/10W
R1027	1-216-043-91	RES,CHIP	560	5%	1/10W
R1028	1-215-429-00	METAL	2.2K	1%	1/4W
R1029	1-216-043-91	RES,CHIP	560	5%	1/10W
R1030	1-216-037-00	RES,CHIP	330	5%	1/10W
R1031	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1032	1-216-037-00	RES,CHIP	330	5%	1/10W
R1033	1-216-037-00	RES,CHIP	330	5%	1/10W
R1034	1-216-081-00	RES,CHIP	22K	5%	1/10W
R1035	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R1036	1-216-037-00	RES,CHIP	330	5%	1/10W
R1037	1-216-037-00	RES,CHIP	330	5%	1/10W
R1038	1-216-037-00	RES,CHIP	330	5%	1/10W
R1039	1-215-423-00	METAL	1.2K	1%	1/4W
R1040	1-216-043-91	RES,CHIP	560	5%	1/10W
R1041	1-216-043-91	RES,CHIP	560	5%	1/10W
R1042	1-216-037-00	RES,CHIP	330	5%	1/10W
R1043	1-216-037-00	RES,CHIP	330	5%	1/10W
R1044	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1045	1-216-037-00	RES,CHIP	330	5%	1/10W
R1046	1-216-043-91	RES,CHIP	560	5%	1/10W
R1047	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R1048	1-216-043-91	RES,CHIP	560	5%	1/10W
R1049	1-249-408-11	CARBON	180	5%	1/4W
R1050	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R1051	1-216-688-11	METAL CHIP	36K	0.50%	1/10W
R1052	1-216-047-91	RES,CHIP	820	5%	1/10W
R1053	1-216-641-11	METAL CHIP	390	0.50%	1/10W
R1054	1-216-071-00	RES,CHIP	8.2K	5%	1/10W
R1055	1-216-043-91	RES,CHIP	560	5%	1/10W
R1056	1-216-037-00	RES,CHIP	330	5%	1/10W
R1057	1-216-009-00	RES,CHIP	22	5%	1/10W
R1058	1-216-017-91	RES,CHIP	47	5%	1/10W
R1059	1-216-017-91	RES,CHIP	47	5%	1/10W
R1060	1-216-017-91	RES,CHIP	47	5%	1/10W
R1061	1-216-017-91	RES,CHIP	47	5%	1/10W
R1062	1-216-017-91	RES,CHIP	47	5%	1/10W
R1063	1-216-037-00	RES,CHIP	330	5%	1/10W
R1064	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R1065	1-216-017-91	RES,CHIP	47	5%	1/10W
R1066	1-216-017-91	RES,CHIP	47	5%	1/10W
R1067	1-216-647-11	METAL CHIP	680	0.50%	1/10W
R1068	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R1069	1-216-017-91	RES,CHIP	47	5%	1/10W
R1070	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R1071	1-216-081-00	RES,CHIP	22K	5%	1/10W

REF NO.	PART NO.	DESCRIPTION			REMARK
R1072	1-216-081-00	RES,CHIP	22K	5%	1/10W
R1073	1-216-649-11	METAL CHIP	820	0.50%	1/10W
R1074	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R1075	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1076	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R1077	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1078	1-216-047-91	RES,CHIP	820	5%	1/10W
R1079	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1080	1-216-039-00	RES,CHIP	390	5%	1/10W
R1081	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R1082	1-216-035-00	RES,CHIP	270	5%	1/10W
R1083	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1084	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1085	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1086	1-216-025-91	RES,CHIP	100	5%	1/10W
R1087	1-216-645-11	METAL CHIP	560	0.50%	1/10W
R1088	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1089	1-216-047-91	RES,CHIP	820	5%	1/10W
R1090	1-216-093-00	RES,CHIP	68K	5%	1/10W
R1091	1-216-641-11	METAL CHIP	390	0.50%	1/10W
R1092	1-216-071-00	RES,CHIP	8.2K	5%	1/10W
R1093	1-216-037-00	RES,CHIP	330	5%	1/10W
R1094	1-216-009-00	RES,CHIP	22	5%	1/10W
R1095	1-216-017-91	RES,CHIP	47	5%	1/10W
R1096	1-216-017-91	RES,CHIP	47	5%	1/10W
R1097	1-216-017-91	RES,CHIP	47	5%	1/10W
R1098	1-216-037-00	RES,CHIP	330	5%	1/10W
R1099	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R1100	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1101	1-216-039-00	RES,CHIP	390	5%	1/10W
R1102	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R1103	1-216-017-91	RES,CHIP	47	5%	1/10W
R1104	1-216-645-11	METAL CHIP	560	0.50%	1/10W
R1105	1-216-017-91	RES,CHIP	47	5%	1/10W
R1106	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R1107	1-216-017-91	RES,CHIP	47	5%	1/10W
R1108	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1109	1-216-619-11	METAL CHIP	47	0.50%	1/10W
R1110	1-216-013-00	RES,CHIP	33	5%	1/10W
R1111	1-216-039-00	RES,CHIP	390	5%	1/10W
R1112	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R1113	1-216-035-00	RES,CHIP	270	5%	1/10W
R1114	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1115	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R1116	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R1117	1-216-041-00	RES,CHIP	470	5%	1/10W
R1118	1-216-041-00	RES,CHIP	470	5%	1/10W
R1119	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R1120	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1121	1-216-649-11	METAL CHIP	820	0.50%	1/10W
R1122	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R1123	1-216-041-00	RES,CHIP	470	5%	1/10W
R1124	1-216-017-91	RES,CHIP	47	5%	1/10W
R1125	1-216-017-91	RES,CHIP	47	5%	1/10W
R1126	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1127	1-216-039-00	RES,CHIP	390	5%	1/10W
R1128	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R1129	1-216-059-00	RES,CHIP	2.7K	5%	1/10W

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REF NO.	PART NO.	DESCRIPTION			REMARK
R1130	1-216-689-11	RES,CHIP	39K	5%	1/10W
R1131	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R1132	1-216-682-11	METAL CHIP	20K	0.50%	1/10W
R1133	1-216-047-91	RES,CHIP	820	5%	1/10W
R1134	1-216-641-11	METAL CHIP	390	0.50%	1/10W
R1135	1-216-071-00	RES,CHIP	8.2K	5%	1/10W
R1136	1-216-043-91	RES,CHIP	560	5%	1/10W
R1137	1-216-037-00	RES,CHIP	330	5%	1/10W
R1138	1-216-009-00	RES,CHIP	22	5%	1/10W
R1139	1-216-017-91	RES,CHIP	47	5%	1/10W
R1140	1-216-017-91	RES,CHIP	47	5%	1/10W
R1141	1-216-017-91	RES,CHIP	47	5%	1/10W
R1142	1-216-017-91	RES,CHIP	47	5%	1/10W
R1143	1-216-017-91	RES,CHIP	47	5%	1/10W
R1144	1-216-037-00	RES,CHIP	330	5%	1/10W
R1145	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R1146	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R1147	1-216-017-91	RES,CHIP	47	5%	1/10W
R1148	1-216-017-91	RES,CHIP	47	5%	1/10W
R1149	1-216-647-11	METAL CHIP	680	0.50%	1/10W
R1150	1-216-629-11	METAL CHIP	120	0.50%	1/10W
R1151	1-216-017-91	RES,CHIP	47	5%	1/10W
R1152	1-216-640-11	METAL CHIP	360	0.50%	1/10W
R1153	1-216-081-00	RES,CHIP	22K	5%	1/10W
R1154	1-216-081-00	RES,CHIP	22K	5%	1/10W
R1155	1-216-647-11	METAL CHIP	680	0.50%	1/10W
R1156	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R1157	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1158	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R1159	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1160	1-216-047-91	RES,CHIP	820	5%	1/10W
R1161	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1162	1-216-039-00	RES,CHIP	390	5%	1/10W
R1163	1-216-035-00	RES,CHIP	270	5%	1/10W
R1164	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1165	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R1166	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1167	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1168	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1169	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1170	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1171	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1172	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1175	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1176	1-216-658-11	METAL CHIP	2K	0.50%	1/10W
R1177	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1178	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1180	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1183	1-218-771-11	METAL CHIP	620K	0.50%	1/10W
R1184	1-216-662-11	METAL CHIP	3K	0.50%	1/10W
R1186	1-216-677-11	METAL CHIP	12K	0.50%	1/10W (14inch)
R1186	1-216-675-11	METAL CHIP	10K	0.50%	1/10W (20inch)
R1187	1-216-113-00	RES,CHIP	470K	5%	1/10W
R1188	1-216-662-11	METAL CHIP	3K	0.50%	1/10W
R1189	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
R1190	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
R1191	1-216-001-00	RES,CHIP	10	5%	1/10W
R1192	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1193	1-216-083-00	RES,CHIP	27K	5%	1/10W

REF NO.	PART NO.	DESCRIPTION			REMARK
R1194	1-216-662-11	METAL CHIP	3K	0.50%	1/10W
R1195	1-216-662-11	METAL CHIP	3K	0.50%	1/10W
R1196	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
R1198	1-216-679-11	METAL CHIP	15K	0.50%	1/10W
R1199	1-216-662-11	METAL CHIP	3K	0.50%	1/10W
R1200	1-216-001-00	RES,CHIP	10	5%	1/10W
R1202	1-216-662-11	METAL CHIP	3K	0.50%	1/10W
R1203	1-216-001-00	RES,CHIP	10	5%	1/10W
R1204	1-216-662-11	METAL CHIP	3K	0.50%	1/10W
R1205	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
R1207	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
R1208	1-216-081-00	RES,CHIP	22K	5%	1/10W
R1209	1-218-756-11	METAL CHIP	150K	0.50%	1/10W (14inch)
R1209	1-218-769-11	METAL CHIP	510K	0.50%	1/10W (20inch)
R1210	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R1211	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1212	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1213	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1214	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1215	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1216	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1219	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R1220	1-216-113-00	RES,CHIP	470K	5%	1/10W
R1221	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1222	1-216-689-11	METAL CHIP	39K	0.50%	1/10W
R1223	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1224	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1225	1-216-085-00	RES,CHIP	33K	5%	1/10W
R1226	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1227	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R1228	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R1229	1-216-025-91	RES,CHIP	100	5%	1/10W
R1230	1-216-025-91	RES,CHIP	100	5%	1/10W
R1231	1-216-025-91	RES,CHIP	100	5%	1/10W
R1232	1-216-033-00	RES,CHIP	220	5%	1/10W
R1233	1-216-033-00	RES,CHIP	220	5%	1/10W
R1234	1-216-033-00	RES,CHIP	220	5%	1/10W
R1235	1-216-033-00	RES,CHIP	220	5%	1/10W
R1236	1-216-033-00	RES,CHIP	220	5%	1/10W
R1237	1-216-033-00	RES,CHIP	220	5%	1/10W
R1239	1-216-113-00	RES,CHIP	470K	5%	1/10W
R1240	1-216-025-91	RES,CHIP	100	5%	1/10W
R1241	1-216-085-00	RES,CHIP	33K	5%	1/10W
R1242	1-216-085-00	RES,CHIP	33K	5%	1/10W
R1243	1-216-085-00	RES,CHIP	33K	5%	1/10W
R1247	1-216-049-91	RES,CHIP	33K	5%	1/10W
R1248	1-216-085-00	RES,CHIP	33K	5%	1/10W
R1249	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1255	1-216-041-00	RES,CHIP	470	5%	1/10W
R1256	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R1257	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R1258	1-216-033-00	RES,CHIP	220	5%	1/10W
R1259	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1260	1-216-097-91	RES,CHIP	100K	5%	1/10W
R1261	1-216-025-91	RES,CHIP	100	5%	1/10W
R1262	1-216-025-91	RES,CHIP	100	5%	1/10W
R1263	1-216-025-91	RES,CHIP	100	5%	1/10W
R1264	1-218-756-11	METAL CHIP	150K	0.50%	1/10W

REF NO.	PART NO.	DESCRIPTION			REMARK
R1265	1-216-081-00	RES,CHIP	22K	5%	1/10W (14inch)
R1265	1-216-682-91	RES,CHIP	20K	5%	1/10W (20inch)
R1266	1-216-685-11	METAL CHIP	27K	0.50%	1/10W
R1267	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1268	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R1269	1-216-682-11	METAL CHIP	20K	0.50%	1/10W
R1270	1-216-009-00	RES,CHIP	22	5%	1/10W
R1271	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1272	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1273	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R1274	1-216-009-00	RES,CHIP	22	5%	1/10W
R1275	1-216-682-11	METAL CHIP	20K	0.50%	1/10W
R1276	1-216-085-00	RES,CHIP	33K	5%	1/10W
R1277	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R1278	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R1279	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R1280	1-216-081-00	RES,CHIP	22K	5%	1/10W
R1281	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R1282	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R1283	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R1284	1-216-689-11	RES,CHIP	39K	5%	1/10W
R1285	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
R1286	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R1287	1-216-689-11	RES,CHIP	39K	5%	1/10W
R1288	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1289	1-216-093-00	RES,CHIP	68K	5%	1/10W
R1290	1-216-081-00	RES,CHIP	22K	5%	1/10W
R1291	1-216-049-91	RES,CHIP	1K	5%	1/10W
R1292	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R1293	1-216-039-00	RES,CHIP	390	5%	1/10W
R1294	1-216-077-00	RES,CHIP	15K	5%	1/10W
R1295	1-216-689-11	RES,CHIP	39K	5%	1/10W
R1296	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1297	1-216-025-91	RES,CHIP	100	5%	1/10W
R1298	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1299	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R1300	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1301	1-216-685-11	METAL CHIP	27K	0.50%	1/10W
R1302	1-216-689-11	METAL CHIP	39K	0.50%	1/10W
R1303	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W
R1304	1-216-693-11	METAL CHIP	56K	0.50%	1/10W
R1305	1-216-097-91	RES,CHIP	100K	5%	1/10W
R2002	1-249-449-11	CARBON	1.5	5%	1/4W F
R2003	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2004	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2005	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2006	1-216-033-00	RES,CHIP	220	5%	1/10W
R2008	1-216-009-00	RES,CHIP	22	5%	1/10W
R2009	1-216-009-00	RES,CHIP	22	5%	1/10W
R2010	1-216-009-00	RES,CHIP	22	5%	1/10W
R2011	1-216-009-00	RES,CHIP	22	5%	1/10W
R2012	1-216-009-00	RES,CHIP	22	5%	1/10W
R2013	1-216-009-00	RES,CHIP	22	5%	1/10W
R2014	1-216-009-00	RES,CHIP	22	5%	1/10W
R2015	1-216-009-00	RES,CHIP	22	5%	1/10W
R2016	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R2017	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R2018	1-216-049-91	RES,CHIP	1K	5%	1/10W

REF NO.	PART NO.	DESCRIPTION			REMARK
R2019	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2020	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2021	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2022	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2023	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R2025	1-216-073-00	RES,CHIP	10K	5%	1/10W
R2026	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2027	1-216-009-00	RES,CHIP	22	5%	1/10W
R2028	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2029	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2030	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2031	1-216-073-00	RES,CHIP	10K	5%	1/10W
R2032	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2033	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2034	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2035	1-216-081-00	RES,CHIP	22K	5%	1/10W
R2036	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2037	1-216-009-00	RES,CHIP	22	5%	1/10W
R2038	1-216-009-00	RES,CHIP	22	5%	1/10W
R2039	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2040	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2041	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2043	1-216-009-00	RES,CHIP	22	5%	1/10W
R2044	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2045	1-216-089-91	RES,CHIP	47K	5%	1/10W
R2046	1-216-089-91	RES,CHIP	47K	5%	1/10W
R2047	1-216-089-91	RES,CHIP	47K	5%	1/10W
R2049	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R2050	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R2051	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W
R2052	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W
R2053	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W
R2054	1-216-669-11	METAL CHIP	5.6K	0.50%	1/10W
R2055	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R2056	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R2057	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R2058	1-216-669-11	METAL CHIP	5.6K	0.50%	1/10W
R2059	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R2060	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W
R2061	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W
R2062	1-216-666-11	METAL CHIP	4.3K	0.50%	1/10W
R2063	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W
R2065	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R2066	1-218-768-11	METAL CHIP	470K	0.50%	1/10W
R2067	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2068	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R2069	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R2070	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R2072	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W
R2073	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W
R2074	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2075	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R2076	1-216-697-91	METAL CHIP	82K	0.50%	1/10W
R2077	1-216-025-91	RES,CHIP	100	5%	1/10W
R2078	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2079	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2080	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2081	1-216-695-11	METAL CHIP	68K	0.50%	1/10W
R2082	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W

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REF NO.	PART NO.	DESCRIPTION			REMARK
R2083	1-216-659-11	METAL CHIP	2.2K	0.50% 1/10W	
R2084	1-216-687-11	METAL CHIP	33K	0.50% 1/10W	
R2085	1-216-676-11	METAL CHIP	11K	0.50% 1/10W	
R2086	1-216-659-11	METAL CHIP	2.2K	0.50% 1/10W (14inch)	
R2086	1-216-657-11	METAL CHIP	1.8K	0.50% 1/10W (20inch)	
R2087	1-216-661-11	METAL CHIP	2.7K	0.50% 1/10W (14inch)	
R2087	1-216-675-11	METAL CHIP	10K	0.50% 1/10W (20inch)	
R2088	1-216-677-11	METAL CHIP	12K	0.50% 1/10W	
R2089	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R2090	1-216-097-91	RES,CHIP	100K	5% 1/10W	
R2091	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R2092	1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R2093	1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R2094	1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R2095	1-216-097-91	RES,CHIP	100K	5% 1/10W	
R2096	1-216-109-00	RES,CHIP	330K	5% 1/10W	
R2097	1-216-683-11	METAL CHIP	22K	0.50% 1/10W	
R2098	1-216-675-11	METAL CHIP	10K	0.50% 1/10W	
R2099	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R2100	1-216-009-00	RES,CHIP	22	5% 1/10W	
R2101	1-216-675-11	METAL CHIP	10K	0.50% 1/10W	
R2102	1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R2103	1-216-657-11	METAL CHIP	1.8K	0.50% 1/10W	
R2105	1-216-089-91	RES,CHIP	47K	5% 1/10W	
R2106	1-216-683-11	METAL CHIP	22K	0.50% 1/10W	
R2107	1-247-735-11	CARBON	47	5% 1/2W	F
R2108	1-216-081-00	RES,CHIP	22K	5% 1/10W	
R2109	1-216-685-11	METAL CHIP	27K	0.50% 1/10W	
R2110	1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R2111	1-216-665-11	METAL CHIP	3.9K	0.50% 1/10W	
R2112	1-216-061-00	RES,CHIP	3.3K	5% 1/10W	
R2113	1-216-655-11	METAL CHIP	1.5K	0.50% 1/10W	
R2114	1-216-683-11	METAL CHIP	22K	0.50% 1/10W	
R2115	1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R2116	1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R2117	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R2118	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R2119	1-216-013-00	RES,CHIP	33	5% 1/10W	
R2120	1-216-013-00	RES,CHIP	33	5% 1/10W	
R2121	1-216-013-00	RES,CHIP	33	5% 1/10W	
R2122	1-216-013-00	RES,CHIP	33	5% 1/10W	
R2123	1-249-404-00	CARBON	82	5% 1/4W	
R2124	1-216-677-11	METAL CHIP	12K	0.50% 1/10W	
R2125	1-216-667-11	METAL CHIP	4.7K	0.50% 1/10W	
R2126	1-216-663-11	METAL CHIP	3.3K	0.50% 1/10W	
R2127	1-216-665-11	METAL CHIP	3.9K	0.50% 1/10W	
R2128	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R2129	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R2130	1-216-683-11	METAL CHIP	22K	0.50% 1/10W	
R2131	1-216-673-11	METAL CHIP	8.2K	0.50% 1/10W	
R2132	1-216-691-11	METAL CHIP	47K	0.50% 1/10W	
R2133	1-216-683-11	METAL CHIP	22K	0.50% 1/10W	
R2134	1-216-699-11	METAL CHIP	100K	0.50% 1/10W	
R2135	1-216-661-11	METAL CHIP	2.7K	0.50% 1/10W	
R2136	1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R2137	1-216-001-00	RES,CHIP	10	5% 1/10W	
R2138	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R2139	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R2141	1-216-085-00	RES,CHIP	33K	5% 1/10W	
R2142	1-216-031-00	RES,CHIP	180	5% 1/10W	
R2144	1-216-652-11	METAL CHIP	1.1K	0.50% 1/10W	
R3001	1-215-867-00	METAL OXIDE	470	5% 1W	F
R3002	1-247-688-11	CARBON	10	5% 1/4W	F
R3003	1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R3004	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R3005	1-216-079-00	RES,CHIP	18K	5% 1/10W	
R3006	1-216-097-91	RES,CHIP	100K	5% 1/10W	
R3007	1-216-061-00	RES,CHIP	3.3K	5% 1/10W	
R3008	1-216-045-00	RES,CHIP	680	5% 1/10W	
R3009	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R3010	1-249-482-11	CARBON	4.7	5% 1/2W	
R3011	1-216-009-00	RES,CHIP	22	5% 1/10W	
R3012	1-216-009-00	RES,CHIP	22	5% 1/10W	
R3013	1-216-009-00	RES,CHIP	22	5% 1/10W	
R3014	1-216-645-11	METAL CHIP	560	0.50% 1/10W	
R3015	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3016	1-216-035-00	RES,CHIP	270	5% 1/10W	
R3017	1-216-645-11	METAL CHIP	560	0.50% 1/10W	
R3018	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3019	1-216-035-00	RES,CHIP	270	5% 1/10W	
R3020	1-216-645-11	METAL CHIP	560	0.50% 1/10W	
R3021	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3022	1-216-035-00	RES,CHIP	270	5% 1/10W	
R3023	1-216-643-11	METAL CHIP	470	0.50% 1/10W	
R3024	1-216-643-11	METAL CHIP	470	0.50% 1/10W	
R3025	1-216-643-11	METAL CHIP	470	0.50% 1/10W	
R3026	1-216-055-00	RES,CHIP	1.8K	5% 1/10W	
R3027	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3028	1-216-055-00	RES,CHIP	1.8K	5% 1/10W	
R3029	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3030	1-216-055-00	RES,CHIP	1.8K	5% 1/10W	
R3031	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3032	1-216-017-91	RES,CHIP	47	5% 1/10W	
R3033	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R3034	1-216-017-91	RES,CHIP	47	5% 1/10W	
R3035	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R3036	1-216-017-91	RES,CHIP	47	5% 1/10W	
R3037	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R3038	1-216-394-00	METAL OXIDE	2.7	5% 3W	F
R3039	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R3040	1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R3041	1-216-075-00	RES,CHIP	12K	5% 1/10W	
R3042	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3043	1-216-077-00	RES,CHIP	15K	5% 1/10W	
R3044	1-216-085-00	RES,CHIP	33K	5% 1/10W	
R3045	1-216-659-11	METAL CHIP	2.2K	0.50% 1/10W	
R3046	1-216-685-11	METAL CHIP	27K	0.50% 1/10W	
R3047	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R3048	1-216-049-91	RES,CHIP	1K	5% 1/10W	
R3049	1-216-099-00	RES,CHIP	120K	5% 1/10W	
R3050	1-216-009-00	RES,CHIP	22	5% 1/10W	
R3051	1-216-025-91	RES,CHIP	100	5% 1/10W	
R3052	1-216-009-00	RES,CHIP	22	5% 1/10W	
R3053	1-216-113-00	RES,CHIP	470K	5% 1/10W	
R3054	1-216-685-11	METAL CHIP	27K	0.50% 1/10W	
R3055	1-216-659-11	METAL CHIP	2.2K	0.50% 1/10W	

REF NO.		PART NO.	DESCRIPTION			REMARK
R3056		1-247-855-31	CARBON	10K	5%	1/4W (14inch)
R3056		1-247-858-31	CARBON	13K	5%	1/4W (20inch)
R3057		1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R3058		1-216-685-11	METAL CHIP	27K	0.50%	1/10W
R3059		1-216-073-00	RES,CHIP	10K	5%	1/10W
R3060		1-216-081-00	RES,CHIP	22K	5%	1/10W
R3061		1-216-073-00	RES,CHIP	10K	5%	1/10W
R3062		1-216-636-11	METAL CHIP	240	0.50%	1/10W
R3063		1-216-636-11	METAL CHIP	240	0.50%	1/10W
R3064	⚠	1-216-661-91	METAL CHIP	2.7K	0.50%	1/10W (14inch)
R3064	⚠	1-216-660-91	METAL CHIP	2.4K	0.50%	1/10W (20inch)
R3065	⚠	1-216-665-91	METAL CHIP	3.9K	0.50%	1/10W
R3069		1-216-081-00	RES,CHIP	22K	5%	1/10W
R3071		1-216-081-00	RES,CHIP	22K	5%	1/10W
R3072		1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R3073		1-216-073-00	RES,CHIP	10K	5%	1/10W
R3074		1-216-081-00	RES,CHIP	22K	5%	1/10W
R3075		1-216-097-91	RES,CHIP	100K	5%	1/10W
R3076		1-216-089-91	RES,CHIP	47K	5%	1/10W
R3078		1-216-649-11	METAL CHIP	820	0.50%	1/10W
R3079		1-216-661-11	METAL CHIP	2.7K	0.50%	1/10W
R3080		1-216-672-11	METAL CHIP	7.5K	0.50%	1/10W (14inch)
R3080		1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W (20inch)
R3083		1-247-863-91	CARBON	22K	5%	1/4W
R3084		1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W (14inch)
R3084		1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W (20inch)
R3085		1-216-693-11	METAL CHIP	56K	0.50%	1/10W
R3086		1-247-692-11	CARBON	22	5%	1/4W F
R3087		1-249-444-11	CARBON	0.56	5%	1/4W F
R3088		1-216-045-00	RES,CHIP	680	5%	1/10W
R3089		1-249-401-11	CARBON	47	5%	1/4W
R3090		1-247-863-91	CARBON	22K	5%	1/4W
R3091		1-249-421-11	CARBON	2.2K	5%	1/4W
R3092		1-216-425-11	METAL OXIDE	56	5%	1W F
R3093		1-249-448-11	CARBON	1.2	5%	1/4W F
R3094		1-216-399-00	METAL OXIDE	6.8	5%	3W F
R3095		1-216-399-00	METAL OXIDE	6.8	5%	3W F
R3096		1-247-692-11	CARBON	22	5%	1/4W F
R3097		1-215-911-11	METAL OXIDE	100	5%	3W F
R3098		1-216-447-00	METAL OXIDE	27	5%	2W F
R3101		1-215-892-11	METAL OXIDE	1K	5%	2W F
R3102		1-216-073-00	RES,CHIP	10K	5%	1/10W
R3103		1-216-081-00	RES,CHIP	22K	5%	1/10W
R3104		1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R3105		1-208-612-11	METAL OXIDE	10M	5%	1W
R3106		1-216-073-00	RES,CHIP	10K	5%	1/10W
R3107		1-202-829-11	SOLID	8.2K	20%	1/2W
R3108		1-208-610-11	METAL OXIDE	2M	5%	1W
R3109		1-249-428-11	CARBON	8.2K	5%	1/4W
R3110		1-216-681-11	METAL CHIP	18K	0.50%	1/10W
R3111		1-249-443-11	CARBON	0.47	5%	1/4W F
R3112		1-216-025-91	RES,CHIP	100	5%	1/10W
R3113		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R3114		1-216-025-91	RES,CHIP	100	5%	1/10W
R3115		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R3116		1-216-025-91	RES,CHIP	100	5%	1/10W
R3117		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R3118		1-216-295-91	SHORT	0		
R3119		1-216-295-91	SHORT	0		

REF NO.	PART NO.	DESCRIPTION			REMARK
R3120	1-216-295-91	SHORT	0		
R3121	1-216-001-00	RES,CHIP	10	5%	1/10W
R3122	1-216-049-91	RES,CHIP	1K	5%	1/10W
R3124	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R3125	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R3126	1-216-073-00	RES,CHIP	10K	5%	1/10W
R3127	1-216-073-00	RES,CHIP	10K	5%	1/10W
R3128	1-216-675-11	METAL CHIP	10K	0.50%	1/10W (20inch)
R3129	1-216-055-00	RES,CHIP	1.8K	5%	1/10W (20inch)
R3130	1-216-057-00	RES,CHIP	2.2K	5%	1/10W (20inch)
R3131	1-216-691-11	METAL CHIP	47K	0.50%	1/10W (20inch)
R3132	1-216-298-00	RES,CHIP	2.2	5%	1/10W (20inch)
R3133	1-216-001-00	RES,CHIP	10	5%	1/10W (20inch)
R3134	1-249-443-11	CARBON	0.47	5%	1/4W F (20inch)
R3135	1-247-760-11	CARBON	4.7K	2%	1/2W F (20inch)
R3136	1-249-485-11	CARBON	8.2	5%	1/2W F (20inch)
R3137	1-216-049-91	RES,CHIP	1K	5%	1/10W
R3138	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R3139	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R3140	1-216-681-11	METAL CHIP	18K	0.50%	1/10W
R3141	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R3142	1-216-073-00	RES,CHIP	10K	5%	1/10W
R3143	1-216-081-00	RES,CHIP	22K	5%	1/10W
R3144	1-216-081-00	RES,CHIP	22K	5%	1/10W
R3145	1-216-073-00	RES,CHIP	10K	5%	1/10W
R3146	1-216-073-00	RES,CHIP	10K	5%	1/10W
R3147	1-216-073-00	RES,CHIP	10K	5%	1/10W
R3148	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R3152	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R3153	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R3154	1-216-685-11	METAL CHIP	27K	0.50%	1/10W
R3155	1-216-677-11	METAL CHIP	12K	0.50%	1/10W
R3158	1-249-387-11	CARBON	3.3	5%	1/4W F
R3159	1-247-692-11	CARBON	22	5%	1/4W F
R3160	1-247-692-11	CARBON	22	5%	1/4W F
R3161	1-249-437-11	CARBON	47K	5%	1/4W
R3162	1-216-049-91	RES,CHIP	1K	5%	1/10W
R3163	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R3164	1-249-377-11	CARBON	0.47	5%	1/4W F
R3165	1-247-883-00	CARBON	150K	5%	1/4W
R3166	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R3167	1-249-393-51	CARBON	10	5%	1/4W F (14inch)
R3167	1-249-389-11	CARBON	4.7	5%	1/4W F (20inch)
R3200	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R3201	1-249-387-11	CARBON	3.3	5%	1/4W F
R4001	1-216-025-91	RES,CHIP	100	5%	1/10W
R4002	1-216-025-91	RES,CHIP	100	5%	1/10W
R4003	1-216-025-91	RES,CHIP	100	5%	1/10W
R4004	1-216-097-91	RES,CHIP	100K	5%	1/10W
R4005	1-216-025-91	RES,CHIP	100	5%	1/10W
R4006	1-216-025-91	RES,CHIP	100	5%	1/10W
R4007	1-216-025-91	RES,CHIP	100	5%	1/10W
R4008	1-216-097-91	RES,CHIP	100K	5%	1/10W
R4009	1-218-756-11	METAL CHIP	150K	0.50%	1/10W
R4010	1-216-089-91	RES,CHIP	47K	5%	1/10W

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REF NO.	PART NO.	DESCRIPTION			REMARK
R4011	1-216-089-91	RES,CHIP	47K	5%	1/10W
R4012	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R4013	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4014	1-216-081-00	RES,CHIP	22K	5%	1/10W
R4015	1-216-081-00	RES,CHIP	22K	5%	1/10W
R4017	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R4018	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R4020	1-216-089-91	RES,CHIP	47K	5%	1/10W
R4021	1-216-089-91	RES,CHIP	47K	5%	1/10W
R4023	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W
R4025	1-218-756-11	METAL CHIP	150K	0.50%	1/10W
R4026	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4027	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4028	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R4029	1-216-073-00	RES,CHIP	10K	5%	1/10W
R4030	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R4031	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R4032	1-216-073-00	RES,CHIP	10K	5%	1/10W
R4033	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R4034	1-216-009-00	RES,CHIP	22	5%	1/10W
R4035	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4036	1-216-009-00	RES,CHIP	22	5%	1/10W
R4037	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R4038	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R4039	1-216-025-91	RES,CHIP	100	5%	1/10W
R4040	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4041	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4043	1-216-041-00	RES,CHIP	470	5%	1/10W
R4044	1-216-113-00	RES,CHIP	470K	5%	1/10W
R4045	1-216-009-00	RES,CHIP	22	5%	1/10W
R4046	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4047	1-216-091-00	RES,CHIP	56K	5%	1/10W
R4048	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4049	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4052	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R4053	1-216-039-00	RES,CHIP	390	5%	1/10W
R4054	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R4055	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4056	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R4057	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4058	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R4059	1-216-107-00	RES,CHIP	270K	5%	1/10W
R4060	1-259-871-15	CARBON	6.8M	5%	1/4W
R4061	1-216-045-00	RES,CHIP	680	5%	1/10W
R4062	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4063	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4067	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R4068	1-216-037-00	RES,CHIP	330	5%	1/10W
R4069	1-216-081-00	RES,CHIP	22K	5%	1/10W
R4072	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4073	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R4075	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4076	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R4077	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R4078	1-216-019-00	RES,CHIP	56	5%	1/10W
R4079	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4080	1-216-111-00	RES,CHIP	390K	5%	1/10W
R4081	1-216-083-00	RES,CHIP	27K	5%	1/10W
R4082	1-216-081-00	RES,CHIP	22K	5%	1/10W
R4083	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R4084	1-216-073-00	RES,CHIP	10K	5%	1/10W
R4085	1-216-041-00	RES,CHIP	470	5%	1/10W
R4086	1-216-041-00	RES,CHIP	470	5%	1/10W
R4088	1-216-089-91	RES,CHIP	47K	5%	1/10W
R4089	1-216-089-91	RES,CHIP	47K	5%	1/10W
R4090	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4091	1-216-695-11	METAL CHIP	68K	0.50%	1/10W
R4092	1-216-089-91	RES,CHIP	47K	5%	1/10W
R4093	1-216-089-91	RES,CHIP	47K	5%	1/10W
R4094	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4095	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4096	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R4097	1-218-756-11	METAL CHIP	150K	0.50%	1/10W
R4098	1-216-049-91	RES,CHIP	1K	5%	1/10W
R4099	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R4100	1-216-025-91	RES,CHIP	100	5%	1/10W
R4101	1-216-097-91	RES,CHIP	100K	5%	1/10W
R4102	1-216-097-91	RES,CHIP	100K	5%	1/10W
R5001	1-249-423-11	CARBON	3.3K	5%	1/4W F
R5002	1-216-679-11	METAL CHIP	15K	0.50%	1/10W (14inch)
R5002	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W (20inch)
R5003	1-216-687-11	METAL CHIP	33K	0.50%	1/10W
R5005	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5006	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5007	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W
R5008	1-249-560-91	CARBON	2.2K	5%	1/4W
R5009	1-216-017-91	RES,CHIP	47	5%	1/10W
R5010	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5011	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5012	1-249-560-91	CARBON	2.2K	5%	1/4W
R5013	1-216-017-91	RES,CHIP	47	5%	1/10W
R5014	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5015	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5016	1-249-560-91	CARBON	2.2K	5%	1/4W
R5017	1-216-017-91	RES,CHIP	47	5%	1/10W
R5018	1-216-033-00	RES,CHIP	220	5%	1/10W
R5019	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5020	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5021	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5022	1-216-035-00	RES,CHIP	270	5%	1/10W
R5023	1-216-035-00	RES,CHIP	270	5%	1/10W
R5024	1-216-033-00	RES,CHIP	220	5%	1/10W
R5025	1-216-035-00	RES,CHIP	270	5%	1/10W
R5026	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R5027	1-249-560-91	CARBON	2.2K	5%	1/4W
R5028	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5029	1-216-037-00	RES,CHIP	330	5%	1/10W
R5030	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R5031	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5032	1-216-037-00	RES,CHIP	330	5%	1/10W
R5033	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R5034	1-249-560-91	CARBON	2.2K	5%	1/4W
R5037	1-216-033-00	RES,CHIP	220	5%	1/10W
R5038	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5039	1-216-025-91	RES,CHIP	100	5%	1/10W
R5040	1-216-103-00	RES,CHIP	180K	5%	1/10W
R5041	1-216-025-91	RES,CHIP	100	5%	1/10W

REF NO.	PART NO.	DESCRIPTION			REMARK
R5042	1-216-103-00	RES,CHIP	180K	5%	1/10W
R5043	1-216-025-91	RES,CHIP	100	5%	1/10W
R5044	1-216-103-00	RES,CHIP	180K	5%	1/10W
R5045	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5046	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5047	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5048	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5049	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R5050	1-249-560-91	CARBON	2.2K	5%	1/4W
R5051	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5052	1-216-037-00	RES,CHIP	330	5%	1/10W
R5053	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R5054	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R5055	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R5056	1-216-081-00	RES,CHIP	22K	5%	1/10W
R5057	1-216-081-00	RES,CHIP	22K	5%	1/10W
R5058	1-216-677-11	METAL CHIP	12K	0.50%	1/10W (14inch)
R5058	1-216-681-11	METAL CHIP	18K	0.50%	1/10W (20inch)
R5059	1-216-627-11	METAL CHIP	100	0.50%	1/10W
R5060	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R5061	1-216-081-00	RES,CHIP	22K	5%	1/10W
R5062	1-216-081-00	RES,CHIP	22K	5%	1/10W
R5063	1-216-679-11	METAL CHIP	15K	0.50%	1/10W (14inch)
R5063	1-216-677-11	METAL CHIP	12K	0.50%	1/10W (20inch)
R5064	1-216-627-11	METAL CHIP	100	0.50%	1/10W
R5065	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R5066	1-216-081-00	RES,CHIP	22K	5%	1/10W
R5067	1-216-081-00	RES,CHIP	22K	5%	1/10W
R5068	1-216-681-11	METAL CHIP	18K	0.50%	1/10W (14inch)
R5068	1-216-679-11	METAL CHIP	15K	0.50%	1/10W (20inch)
R5069	1-216-627-11	METAL CHIP	100	0.50%	1/10W
R5070	1-216-041-00	RES,CHIP	470	5%	1/10W
R5071	1-216-041-00	RES,CHIP	470	5%	1/10W
R5072	1-216-041-00	RES,CHIP	470	5%	1/10W
R5073	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5074	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5075	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R5076	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5077	1-216-025-91	RES,CHIP	100	5%	1/10W
R5078	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R5079	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5080	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5081	1-216-025-91	RES,CHIP	100	5%	1/10W
R5082	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5083	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R5084	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5085	1-216-025-91	RES,CHIP	100	5%	1/10W
R5086	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5087	1-216-025-91	RES,CHIP	100	5%	1/10W
R5088	1-216-025-91	RES,CHIP	100	5%	1/10W
R5089	1-216-025-91	RES,CHIP	100	5%	1/10W
R5090	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5091	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5092	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5093	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5094	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5095	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5096	1-216-017-91	RES,CHIP	47	5%	1/10W

REF NO.	PART NO.	DESCRIPTION			REMARK
R5097	1-216-017-91	RES,CHIP	47	5%	1/10W
R5098	1-216-017-91	RES,CHIP	47	5%	1/10W
R5099	1-216-017-91	RES,CHIP	47	5%	1/10W
R5100	1-216-017-91	RES,CHIP	47	5%	1/10W
R5101	1-216-017-91	RES,CHIP	47	5%	1/10W
R5102	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R5103	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R5104	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R5105	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R5106	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R5107	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R5108	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R5109	1-216-009-00	RES,CHIP	22	5%	1/10W
R5110	1-216-009-00	RES,CHIP	22	5%	1/10W
R5111	1-216-009-00	RES,CHIP	22	5%	1/10W
R5112	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5114	1-216-017-91	RES,CHIP	47	5%	1/10W
R5118	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R5119	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W
R5120	1-216-017-91	RES,CHIP	47	5%	1/10W
R5121	1-216-017-91	RES,CHIP	47	5%	1/10W
R5122	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5123	1-216-619-11	METAL CHIP	47	0.50%	1/10W
R5124	1-216-619-11	METAL CHIP	47	0.50%	1/10W
R5125	1-216-619-11	METAL CHIP	47	0.50%	1/10W
R5126	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R5127	1-216-095-00	RES,CHIP	82K	5%	1/10W
R5128	1-216-081-00	RES,CHIP	22K	5%	1/10W
R5129	1-216-025-91	RES,CHIP	100	5%	1/10W
R5130	1-216-025-91	RES,CHIP	100	5%	1/10W
R5131	1-216-687-11	METAL CHIP	33K	0.50%	1/10W
R5132	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R5133	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R5134	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R5135	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R5136	1-216-017-91	RES,CHIP	47	5%	1/10W
R5137	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R5138	1-216-025-91	RES,CHIP	100	5%	1/10W
R5139	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R5140	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5141	1-216-089-91	RES,CHIP	47K	5%	1/10W
R5142	1-218-756-11	METAL CHIP	150K	0.50%	1/10W
R5144	1-218-772-11	METAL CHIP	680K	0.50%	1/10W (14inch)
R5144	1-218-771-11	METAL CHIP	620K	0.50%	1/10W (20inch)
R5145	1-218-772-11	METAL CHIP	680K	0.50%	1/10W (14inch)
R5145	1-218-771-11	METAL CHIP	620K	0.50%	1/10W (20inch)
R5146	1-216-025-91	RES,CHIP	100	5%	1/10W
R5147	1-216-097-91	RES,CHIP	100K	5%	1/10W
R5148	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5149	1-216-025-91	RES,CHIP	100	5%	1/10W
R5150	1-216-049-91	RES,CHIP	1K	5%	1/10W
R5151	1-218-776-11	METAL CHIP	1M	0.50%	1/10W
R5152	1-216-097-91	RES,CHIP	100K	5%	1/10W
R5185	1-218-762-11	METAL CHIP	270K	0.50%	1/10W (14inch)
R5185	1-218-763-11	METAL CHIP	300K	0.50%	1/10W (20inch)
R5200	1-249-417-11	CARBON	1K	5%	1/4W
R6001	1-216-009-00	RES,CHIP	22	5%	1/10W
R6002	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R6003	1-216-057-00	RES,CHIP	2.2K	5%	1/10W

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REF NO.		PART NO.	DESCRIPTION			REMARK
R6005		1-216-295-91	SHORT	0		
R6006		1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R6007		1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R6008		1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R6009		1-216-097-91	RES,CHIP	100K	5%	1/10W (14inch)
R6009		1-216-049-91	RES,CHIP	1K	5%	1/10W (20inch)
R6010		1-216-049-91	RES,CHIP	1K	5%	1/10W (14inch)
R6010		1-216-097-91	RES,CHIP	100K	5%	1/10W (20inch)
R6011		1-216-049-91	RES,CHIP	1K	5%	1/10W
R6012		1-216-097-91	RES,CHIP	100K	5%	1/10W
R6013		1-216-097-91	RES,CHIP	100K	5%	1/10W
R7001		1-216-113-00	RES,CHIP	470K	5%	1/10W
R7002		1-216-121-91	RES,CHIP	1M	5%	1/10W
R7003		1-247-847-31	CARBON	1.4K	5%	1/4W
			<TRANSFORMER>			
T3001		1-423-769-11	TRANSFORMER, HORIZONTAL DRIVE			
T3002		1-423-855-11	TRANSFORMER, FERRITE (HRT)			
T3003	⚠	1-453-204-11	FBT ASSY			
			<THERMISTOR>			
TH3001		1-807-973-11	THERMISTOR	3K		
			<TEST PIN>			
TP21		1-535-570-11	PIN, TERMINAL			
TP22		1-535-570-11	PIN, TERMINAL			
TP3006		1-535-570-11	PIN, TERMINAL			
TP3007		1-535-570-11	PIN, TERMINAL			
			<CRYSTAL>			
X2001		1-760-040-11	VIBRATOR, CRYSTAL			

****

	* A-1335-088-A	C COMPLETE PWB (14inch)	
		**********	
	* A-1335-087-A	C COMPLETE PWB (20inch)	
		**********	
	* X-4033-345-1	ASSY, HEAT SINK (C)	
	4-373-933-01	SHEET (TRANSISTOR), BN	
	4-382-854-01	SCREW (M3X8), P, SW (+)	

<CAPACITOR>

C801	1-136-627-11	FILM	0.022MF	3%	1KV
C802	1-162-116-00	CERAMIC	680PF	10%	2KV
C803	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C804	1-107-963-11	ELECT	33MF	20%	250V
C805	1-102-050-00	CERAMIC	0.01MF	99%	500V
C806	1-107-888-11	ELECT	47MF	20%	25V
C807	1-101-004-00	CERAMIC	0.01MF		50V
C808	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C809	1-102-109-00	CERAMIC	180PF	10%	50V (14inch)
C809	1-102-108-00	CERAMIC	150PF	10%	50V (20inch)
C810	1-107-963-11	ELECT	33MF	20%	250V
C811	1-102-050-00	CERAMIC	0.01MF	99%	500V
C812	1-107-888-11	ELECT	47MF	20%	25V
C813	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C814	1-101-004-00	CERAMIC	0.01MF		50V
C815	1-102-109-00	CERAMIC	180PF	10%	50V (14inch)
C815	1-102-108-00	CERAMIC	150PF	10%	50V (20inch)
C816	1-107-963-11	ELECT	33MF	20%	250V
C817	1-102-050-00	CERAMIC	0.01MF	99%	500V
C818	1-107-888-11	ELECT	47MF	20%	25V
C819	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C820	1-101-004-00	CERAMIC	0.01MF		50V
C821	1-102-109-00	CERAMIC	180PF	10%	50V (14inch)
C821	1-102-108-00	CERAMIC	150PF	10%	50V (20inch)
C822	1-136-601-11	FILM	0.01MF	10%	630V

<CONNECTOR>

CN801	* 1-691-097-11	PIN, CONNECTOR (PC BOARD) 6P	
CN802	1-564-524-11	PLUG, CONNECTOR 9P	
CN803	* 1-766-179-11	PIN, CONNECTOR (PC BOARD) 2P	
CN804	* 1-564-518-11	PLUG, CONNECTOR 3P	

<DIODE>

D801	8-719-901-83	DIODE 1SS83
D802	8-719-404-49	DIODE MA111
D803	8-719-404-49	DIODE MA111
D804	8-719-404-49	DIODE MA111
D805	8-719-404-49	DIODE MA111
D806	8-719-404-49	DIODE MA111
D807	8-719-911-19	DIODE 1SS119-25
D808	8-719-901-83	DIODE 1SS83
D809	8-719-901-83	DIODE 1SS83
D810	8-719-404-49	DIODE MA111
D811	8-719-404-49	DIODE MA111
D812	8-719-404-49	DIODE MA111
D813	8-719-404-49	DIODE MA111
D814	8-719-404-49	DIODE MA111
D815	8-719-911-19	DIODE 1SS119-25
D816	8-719-901-83	DIODE 1SS83
D817	8-719-901-83	DIODE 1SS83
D818	8-719-404-49	DIODE MA111
D819	8-719-404-49	DIODE MA111
D820	8-719-404-49	DIODE MA111
D821	8-719-404-49	DIODE MA111
D822	8-719-404-49	DIODE MA111
D823	8-719-911-19	DIODE 1SS119-25
D824	8-719-901-83	DIODE 1SS83
D825	8-719-901-83	DIODE 1SS83
D826	8-719-404-49	DIODE MA111
D827	8-719-404-49	DIODE MA111
D828	8-719-404-49	DIODE MA111

<JACK>

J801	⚠	1-251-116-12	SOCKET, CRT

REF NO.	PART NO.	DESCRIPTION				REMARK
		<CHIP CONDUCTOR>				
JR803	1-216-296-91	SHORT				
JR804	1-216-296-91	SHORT				
JR805	1-216-296-91	SHORT				
JR820	1-216-296-91	SHORT				
JR821	1-216-296-91	SHORT				
JR822	1-216-296-91	SHORT				
JR823	1-216-296-91	SHORT				
JR824	1-216-296-91	SHORT				
JR831	1-216-295-91	SHORT				
		<COIL>				
L801	1-408-608-31	INDUCTOR 27UH				
L802	1-408-595-31	INDUCTOR 2.2UH (14inch)				
L802	1-408-598-31	INDUCTOR 3.9UH (20inch)				
L803	1-408-595-31	INDUCTOR 2.2UH (14inch)				
L803	1-408-598-31	INDUCTOR 3.9UH (20inch)				
L804	1-408-595-31	INDUCTOR 2.2UH (14inch)				
L804	1-408-598-31	INDUCTOR 3.9UH (20inch)				
L805	1-421-465-00	INDUCTOR 0UH				
		<TRANSISTOR>				
Q801	8-729-255-12	TRANSISTOR 2SC2551-O				
Q802	8-729-255-12	TRANSISTOR 2SC2551-O				
Q803	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q804	8-729-809-22	TRANSISTOR 2SC3950-D				
Q805	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q806	8-729-801-88	TRANSISTOR 2SA1381-E				
Q807	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q808	8-729-801-88	TRANSISTOR 2SA1381-E				
Q809	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q810	8-729-809-22	TRANSISTOR 2SC3950-D				
Q811	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q812	8-729-801-88	TRANSISTOR 2SA1381-E				
Q813	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q814	8-729-801-88	TRANSISTOR 2SA1381-E				
Q815	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q816	8-729-809-22	TRANSISTOR 2SC3950-D				
Q817	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q818	8-729-801-88	TRANSISTOR 2SA1381-E				
Q819	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q820	8-729-801-88	TRANSISTOR 2SA1381-E				
Q821	8-729-140-96	TRANSISTOR 2SD774-34				
Q822	8-729-120-28	TRANSISTOR 2SC1623-L5L6				
Q823	8-729-140-97	TRANSISTOR 2SB734-34				
		<RESISTOR>				
R801	1-202-838-00	SOLID	100K	20%	1/2W	
R802	1-202-730-00	SOLID	8.2M	20%	1/2W	
R803	1-216-374-00	METAL OXIDE	2.7	5%	2W	F (14inch)
R803	1-216-375-00	METAL OXIDE	3.3	5%	2W	F (20inch)
R805	1-202-843-11	SOLID	270K	20%	1/2W	
R806	1-247-843-11	CARBON	3.3K	5%	1/4W	
R807	1-249-429-11	CARBON	10K	5%	1/4W	

REF NO.	PART NO.	DESCRIPTION				REMARK
R808	1-215-879-11	METAL OXIDE	47K	5%	1W	F
R809	1-247-725-11	CARBON	10K	5%	1/4W	F
R810	1-249-923-11	CARBON	1K	5%	1/4W	F
R811	1-215-902-11	METAL OXIDE	47K	5%	2W	F
R813	1-247-807-31	CARBON	100	5%	1/4W	
R814	1-219-688-11	METAL	2.7K	1%	10W	
R816	9-910-999-31	METAL	150	1%	1/2W (14inch)	
R816	1-214-842-11	METAL	120	1%	1/2W (20inch)	
R817	1-214-834-00	METAL	56	1%	1/2W (14inch)	
R817	1-214-832-00	METAL	47	1%	1/2W (20inch)	
R818	1-216-017-91	RES,CHIP	47	5%	1/10W	
R819	1-216-017-91	RES,CHIP	47	5%	1/10W	
R821	1-216-013-00	RES,CHIP	33	5%	1/10W	
R822	1-216-013-00	RES,CHIP	33	5%	1/10W	
R823	1-215-892-11	METAL OXIDE	1K	5%	2W	F
R824	1-247-887-00	CARBON	220K	5%	1/4W	
R825	1-215-888-00	METAL OXIDE	220	5%	2W	F
R826	1-202-820-11	SOLID	1.5K	20%	1/2W (14inch)	
R826	1-202-833-11	SOLID	18K	20%	1/2W (20inch)	
R827	1-249-409-11	CARBON	220	5%	1/4W	F
R828	1-216-295-91	SHORT	0			
R829	1-247-807-31	CARBON	100	5%	1/4W	
R830	1-219-688-11	METAL	2.7K	1%	10W	
R832	9-910-999-31	METAL	150	1%	1/2W (14inch)	
R832	1-214-842-11	METAL	120	1%	1/2W (20inch)	
R833	1-214-834-00	METAL	56	1%	1/2W (14inch)	
R833	1-214-832-00	METAL	47	1%	1/2W (20inch)	
R834	1-216-017-91	RES,CHIP	47	5%	1/10W	
R835	1-216-017-91	RES,CHIP	47	5%	1/10W	
R837	1-216-013-00	RES,CHIP	33	5%	1/10W	
R838	1-216-013-00	RES,CHIP	33	5%	1/10W	
R839	1-215-892-11	METAL OXIDE	1K	5%	2W	F
R840	1-247-887-00	CARBON	220K	5%	1/4W	
R841	1-215-888-00	METAL OXIDE	220	5%	2W	F
R842	1-202-820-11	SOLID	1.5K	20%	1/2W (14inch)	
R842	1-202-833-11	SOLID	18K	20%	1/2W (20inch)	
R843	1-249-409-11	CARBON	220	5%	1/4W	F
R844	1-216-295-91	SHORT	0			
R845	1-247-807-31	CARBON	100	5%	1/4W	
R846	1-219-688-11	METAL	2.7K	1%	10W	
R848	9-910-999-31	METAL	150	1%	1/2W (14inch)	
R848	1-214-842-11	METAL	120	1%	1/2W (20inch)	
R849	1-214-834-00	METAL	56	1%	1/2W (14inch)	
R849	1-214-832-00	METAL	47	1%	1/2W (20inch)	
R850	1-216-017-91	RES,CHIP	47	5%	1/10W	
R851	1-216-017-91	RES,CHIP	47	5%	1/10W	
R853	1-216-013-00	RES,CHIP	33	5%	1/10W	
R854	1-216-013-00	RES,CHIP	33	5%	1/10W	
R855	1-215-892-11	METAL OXIDE	1K	5%	2W	F
R856	1-247-887-00	CARBON	220K	5%	1/4W	
R857	1-215-888-00	METAL OXIDE	220	5%	2W	F
R858	1-202-820-11	SOLID	1.5K	20%	1/2W (14inch)	
R858	1-202-833-11	SOLID	18K	20%	1/2W (20inch)	
R859	1-249-409-11	CARBON	220	5%	1/4W	F
R860	1-247-887-00	CARBON	220K	5%	1/4W	
R861	1-216-049-91	RES,CHIP	1K	5%	1/10W	
R862	1-216-073-00	RES,CHIP	10K	5%	1/10W	
R863	1-216-053-00	RES,CHIP	1.5K	5%	1/10W	

C G

REF NO.		PART NO.	DESCRIPTION			REMARK
R865		1-216-017-91	RES,CHIP	47	5%	1/10W
R866		1-216-292-11	RES,CHIP	8.2M	5%	1/8W
			<VARIABLE RESISTOR>			
RV801	⚠	1-223-410-21	RES, ADJ, METAL FILM 110M			
			<SPARK GAP>			
SG801		1-519-422-11	GAP, SPARK			
SG802		1-519-422-11	GAP, SPARK			
SG803		1-519-422-11	GAP, SPARK			
SG804		1-519-422-11	GAP, SPARK			
SG805		1-519-422-11	GAP, SPARK			
**********						
		* A-1316-320-A	G COMPLETE PWB			
			**********			
		* X-4033-346-1	HEAT SINK ASSY (G)			
		* X-4033-346-1	HEAT SINK ASSY (G)			
		1-533-223-11	HOLDER, FUSE			
		4-051-627-01	SHEET, INSULATING			
		* 4-374-846-11	COVER, CAPACITOR, CAP TYPE			
		4-382-854-01	SCREW (M3X8), P, SW (+)			
		4-382-854-11	SCREW (M3X10), P, SW (+)			
		7-322-065-19	RUBBER, SILICON RTV (KE490W)			
			<CAPACITOR>			
C601		1-109-841-11	ELECT(BLOCK)	560MF	20%	400V
C602	⚠	1-130-711-51	FILM	0.22MF	20%	250V
C603	⚠	1-130-711-51	FILM	0.22MF	20%	250V
C604	⚠	1-113-920-91	CERAMIC	0.0022MF	20%	250V
C605	⚠	1-113-920-91	CERAMIC	0.0022MF	20%	250V
C606	⚠	1-113-920-91	CERAMIC	0.0022MF	20%	250V
C607	⚠	1-113-920-91	CERAMIC	0.0022MF	20%	250V
C608	⚠	1-113-924-91	CERAMIC	0.0047MF	20%	250V
C609	⚠	1-113-924-91	CERAMIC	0.0047MF	20%	250V
C610	⚠	1-113-924-91	CERAMIC	0.0047MF	20%	250V
C611	⚠	1-113-924-91	CERAMIC	0.0047MF	20%	250V
C612		1-137-484-11	FILM	0.47MF	10%	630V
C614		1-129-720-00	FILM	0.033MF	5%	630V
C615		1-136-619-11	FILM	0.0016MF	3%	2KV
C616		1-126-967-11	ELECT	47MF	20%	50V
C617		1-136-557-11	FILM	0.0033MF	5%	630V
C618		1-126-964-11	ELECT	10MF	20%	50V
C619		1-126-969-11	ELECT	220MF	20%	50V
C621		1-125-494-11	ELECT(BLOCK)	560MF	20%	160V
C622		1-102-038-00	CERAMIC	0.001MF		500V
C623		1-107-885-11	ELECT	3300MF	20%	16V
C625		1-102-038-00	CERAMIC	0.001MF		500V
C626		1-107-900-51	ELECT	4700MF	20%	35V
C627		1-102-038-00	CERAMIC	0.001MF		500V
C628		1-128-548-11	ELECT	4700MF	20%	5V
C629		1-126-964-11	ELECT	10MF	20%	50V
C630		1-136-853-11	FILM	0.56MF	5%	200V
C631		1-107-995-11	ELECT	100MF	0	160V

REF NO.		PART NO.	DESCRIPTION			REMARK
C632		1-107-910-11	ELECT	100MF	20%	50V
C633		1-107-911-11	ELECT	220MF	20%	50V
C635		1-107-889-11	ELECT	220MF	20%	25V
C636		1-162-135-11	CERAMIC	560PF	10%	2KV
C637		1-107-948-11	ELECT	330MF	20%	160V
C638		1-126-355-11	ELECT	33MF	20%	160V
			<CONNECTOR>			
CN601		1-691-960-11	PIN, CONNECTOR (PC BOARD) 3P			
CN602		* 1-695-561-11	PIN, CONNECTOR (PC BOARD) 7P			
CN603		* 1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P			
CN605		* 1-573-964-11	PIN, CONNECTOR (PC BOARD) 6P			
CN606		* 1-564-508-11	PLUG, CONNECTOR 5P			
CN607		* 1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P			
CN609		* 1-564-506-11	PLUG, CONNECTOR 3P			
CN610		1-691-960-11	PIN, CONNECTOR (PC BOARD) 3P			
			<DIODE>			
D605		8-719-971-65	DIODE RGP15J-6040			
D606		8-719-054-32	DIODE ERA15-06			
D607		8-719-300-33	DIODE RU-3AM			
D608		8-719-911-19	DIODE 1SS119-25			
D609		8-719-300-33	DIODE RU-3AM			
D610		8-719-029-04	DIODE D5L60			
D611		8-719-045-48	DIODE FML-G12S			
D612		8-719-045-48	DIODE FML-G12S			
D613		8-719-920-67	DIODE ERC91-02			
D614		8-719-054-32	DIODE ERA15-06			
D615		8-719-110-46	DIODE RD16ESB3			
D616		8-719-918-78	DIODE V19GF1			
D618		8-719-300-33	DIODE RU-3AM			
D619	⚠	8-719-052-29	DIODE LN4SB60-F			
D620		8-719-054-32	DIODE ERA15-06			
			<FUSE>			
F601	⚠	1-576-231	FUSE (H.B.C.) 4A/250V			
			<FERRITE BEAD>			
FB601		1-410-396-41	FERRITE 0.45UH			
FB602		1-410-396-41	FERRITE 0.45UH			
FB603		1-410-396-41	FERRITE 0.45UH			
FB604		1-410-396-41	FERRITE 0.45UH			
FB605		1-410-396-41	FERRITE 0.45UH			
FB606		1-410-396-41	FERRITE 0.45UH			
FB607		1-410-396-41	FERRITE 0.45UH			
FB608		1-410-396-41	FERRITE 0.45UH			
FB609		1-410-396-41	FERRITE 0.45UH			
FB610		1-410-396-41	FERRITE 0.45UH			
			<IC>			
IC601		8-749-925-03	IC STR-M6524			
IC602		8-749-010-47	IC STR-S3115			
IC603		8-759-332-39	IC UPC24M06HF			
IC604		8-759-701-56	IC NJM78M05FA			

REF NO.		PART NO.	DESCRIPTION				REMARK
			<COIL>				
L601		1-411-541-11	INDUCTOR	7.2mH			
L602		1-421-421-00	INDUCTOR	0UH			
L603		1-421-465-00	INDUCTOR	0UH			
L604		1-421-465-00	INDUCTOR	0UH			
			<PHOTO COUPLER>				
PH601		8-749-923-50	PHOTO COUPLER PC111YS				
			<TRANSISTOR>				
Q601		8-729-140-96	TRANSISTOR 2SD774-34				
Q602		8-729-026-13	TRANSISTOR 2SC4833S-P2				
Q603		8-729-303-61	TRANSISTOR 2SC3851-G				
			<RESISTOR>				
R601	⚠	1-202-885-91	SOLID	1M	20%	1/2W	
R602		1-216-489-11	METAL OXIDE	27K	5%	3W	F
R603		1-216-491-11	METAL OXIDE	56K	5%	3W	F
R604		1-249-418-11	CARBON	1.2K	5%	1/4W	
R605		1-249-417-11	CARBON	1K	5%	1/4W	
R606		1-207-642-00	WIREWOUND	0.15	10%	3W	F
R607		1-247-843-11	CARBON	3.3K	5%	1/4W	
R608		1-249-426-11	CARBON	5.6K	5%	1/4W	
R609		1-249-426-11	CARBON	5.6K	5%	1/4W	
R610		1-249-421-11	CARBON	2.2K	5%	1/4W	
R611		1-249-417-11	CARBON	1K	5%	1/4W	
R612		1-249-404-00	CARBON	82	5%	1/4W	
R613		1-249-419-11	CARBON	1.5K	5%	1/4W	
R614		1-249-385-11	CARBON	2.2	5%	1/4W	F
R615	⚠	1-202-892-91	SOLID	4.7M	20%	1/2W	
R616		1-202-933-61	FUSIBLE	0.1	10%	1/2W	F
R617		1-211-761-11	FUSIBLE	0.1	10%	1/2W	
R619		1-211-761-11	FUSIBLE	0.1	10%	1/2W	
R620		1-211-761-11	FUSIBLE	0.1	10%	1/2W	
R621		1-216-440-00	METAL OXIDE	18K	5%	1W	F
R622		1-247-807-31	CARBON	100	5%	1/4W	
R623		1-249-417-11	CARBON	1K	5%	1/4W	
R624		1-216-341-11	METAL OXIDE	0.22	5%	1W	F
R625		1-216-341-11	METAL OXIDE	0.22	5%	1W	F
R626		1-215-869-11	METAL OXIDE	1K	5%	1W	F
R627		1-202-846-00	SOLID	470	20%	1/2W	
R628		1-249-409-11	CARBON	220	5%	1/4W	F
R629		1-211-761-11	FUSIBLE	0.1	10%	1/2W	
R630		1-249-414-11	CARBON	560	5%	1/4W	F
R632	⚠	1-202-892-91	SOLID	4.7M	20%	1/2W	
R633		1-247-903-00	CARBON	1M	5%	1/4W	
R634		1-247-903-00	CARBON	1M	5%	1/4W	
R635		1-247-903-00	CARBON	1M	5%	1/4W	
			<RELAY>				
RY601	⚠	1-515-738-11	RELAY				

REF NO.		PART NO.	DESCRIPTION				REMARK
			<TRANSFORMER>				
T601	⚠	1-423-333-11	TRANSFORMER, LINE FILTER (LFT)				
T602	⚠	1-423-333-11	TRANSFORMER, LINE FILTER (LFT)				
T603	⚠	1-429-462-11	TRANSFORMER, CONVERTER (SRT)				
			<THERMISTOR>				
THP601	⚠	1-808-059-32	THERMISTOR, POSITIVE				
			<TEST PIN>				
TP603		1-536-354-00	POST PIN				
			<VARISTOR>				
VDR601	⚠	1-809-942-71	VARISTOR				
VDR602		1-809-942-71	VARISTOR				
VDR603	⚠	1-810-622-11	VARISTOR				
**********							
		* A-1372-340-A	H MOUNTED PWB				
			**********				
		* 4-348-208-00	HOLDER, LED				
		7-322-065-19	RUBBER, SILICON RTV (KE490W)				
			<CAPACITOR>				
C501		1-101-004-00	CERAMIC	0.01MF		50V	
C502		1-101-004-00	CERAMIC	0.01MF		50V	
C503		1-101-004-00	CERAMIC	0.01MF		50V	
C510		1-136-169-00	FILM	0.22MF	5%	50V	
			<CONNECTOR>				
CN501		* 1-564-524-11	PLUG, CONNECTOR 9P				
CN502		* 1-564-528-11	PLUG, CONNECTOR 13P				
			<DIODE>				
D501		8-719-911-19	DIODE 1SS119-25				
D502		8-719-911-19	DIODE 1SS119-25				
D503		8-719-911-19	DIODE 1SS119-25				
D504		8-719-911-19	DIODE 1SS119-25				
D505		8-719-911-19	DIODE 1SS119-25				
D506		8-719-911-19	DIODE 1SS119-25				
D507		8-719-911-19	DIODE 1SS119-25				
D508		8-719-911-19	DIODE 1SS119-25				
D509		8-719-920-05	DIODE SLP281C-50				
D511		8-719-812-32	DIODE TLY123				
D512		8-719-911-19	DIODE 1SS119-25				
			<TRANSISTOR>				
Q501		8-729-029-21	TRANSISTOR DTA114ESA-TP				

H J P

REF NO.	PART NO.	DESCRIPTION			REMARK
		<RESISTOR>			
R501	1-249-430-11	CARBON	12K	5%	1/4W
R502	1-247-863-91	CARBON	22K	5%	1/4W
R503	1-247-863-91	CARBON	22K	5%	1/4W
R504	1-249-417-11	CARBON	1K	5%	1/4W
R505	1-249-417-11	CARBON	1K	5%	1/4W
R506	1-249-417-11	CARBON	1K	5%	1/4W
R507	1-249-417-11	CARBON	1K	5%	1/4W
R508	1-249-417-11	CARBON	1K	5%	1/4W
R509	1-249-417-11	CARBON	1K	5%	1/4W
R510	1-249-421-11	CARBON	2.2K	5%	1/4W
R512	1-249-414-11	CARBON	560	5%	1/4W
R513	1-249-436-11	CARBON	39K	5%	1/4W
R514	1-249-417-11	CARBON	1K	5%	1/4W
R515	1-249-427-11	CARBON	6.8K	5%	1/4W
		<VARIABLE RESISTOR>			
RV501	1-225-385-11	RES, VAR, CARBON 20K			
RV502	1-225-385-11	RES, VAR, CARBON 20K			
RV503	1-225-385-11	RES, VAR, CARBON 20K			
RV504	1-225-385-11	RES, VAR, CARBON 20K			
RV505	1-225-385-11	RES, VAR, CARBON 20K			
		<SWITCH>			
S501	1-570-969-11	SWITCH, KEY BOARD			
S502	1-570-969-11	SWITCH, KEY BOARD			
S503	1-570-969-11	SWITCH, KEY BOARD			
S504	1-570-969-11	SWITCH, KEY BOARD			
S505	1-570-101-41	SWITCH, KEY BOARD			
S506	1-570-101-41	SWITCH, KEY BOARD			
S507	1-570-101-41	SWITCH, KEY BOARD			
S508	1-570-101-41	SWITCH, KEY BOARD			
S509	1-570-101-41	SWITCH, KEY BOARD			
S510	1-570-101-41	SWITCH, KEY BOARD			
S511	1-570-101-41	SWITCH, KEY BOARD			

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	* A-1388-195-A	J MOUNTED PWB	
		**********	
		<CONNECTOR>	
CN608	* 1-695-561-11	PIN, CONNECTOR (PC BOARD) 7P	
		<SWITCH>	
S601	⚠ 1-692-921-11	SWITCH, PUSH (A.C. POWER)	

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REF NO.	PART NO.	DESCRIPTION			REMARK
	* A-1135-899-A	P COMPLETE PWB (14inch)			
		**********			
	* 4-043-154-01	HOLDER, IC			
	4-363-414-00	SPACER, MICA			
	4-382-854-01	SCREW(M3X8), P, SW (+)			
	7-682-949-01	SCREW +PSW3X10			
	7-682-950-01	SCREW +PSW3X12			
	7-685-647-79	SCREW +BVTP3X10 TYPE2 IT-3			
		<CAPACITOR>			
C901	1-102-129-00	CERAMIC	0.01MF	10%	50V
C902	1-126-942-61	ELECT	1000MF	20%	25V
C903	1-126-968-11	ELECT	100MF	20%	50V
C904	1-136-177-00	FILM	1MF	5%	50V
C905	1-126-959-11	ELECT	0.47MF	20%	50V
C906	1-126-933-11	ELECT	100MF	20%	16V
C907	1-130-728-00	FILM	0.0022MF	5%	50V
C908	1-102-129-00	CERAMIC	0.01MF	10%	50V
C909	1-126-942-61	ELECT	1000MF	20%	25V
C910	1-106-220-00	MYLAR	0.1MF	10%	100V
C913	1-123-024-21	ELECT	33MF		160V
C914	1-106-383-00	MYLAR	0.047MF	10%	200V
C915	1-136-159-00	FILM	0.033MF	5%	50V
C917	1-126-767-11	ELECT	1000MF	20%	16V
C918	1-126-767-11	ELECT	1000MF	20%	16V
C919	1-136-165-00	FILM	0.1MF	5%	50V
C920	1-136-165-00	FILM	0.1MF	5%	50V
C921	1-136-165-00	FILM	0.1MF	5%	50V
C922	1-104-966-11	ELECT	10MF	0	200V
C923	1-136-541-11	FILM	1.5MF	5%	200V
C924	1-136-173-00	FILM	0.47MF	5%	50V
C925	1-136-155-00	FILM	0.015MF	5%	50V
C926	1-107-914-11	ELECT	1000MF	20%	25V
C927	1-136-481-11	MYLAR	0.0022MF	10%	100V
C928	1-136-044-00	FILM	0.0017MF	3%	1.6KV
C929	1-161-754-00	CERAMIC	0.001MF	10%	2KV
C930	1-126-967-11	ELECT	47MF	20%	16V
C931	1-102-129-00	CERAMIC	0.01MF	10%	50V
C932	1-162-558-11	CERAMIC	100PF	10%	2KV
C933	1-136-553-11	FILM	0.0015MF	5%	630V
C934	1-126-967-11	ELECT	47MF	20%	16V
C935	1-162-558-11	CERAMIC	100PF	10%	2KV
C936	1-102-129-00	CERAMIC	0.01MF	10%	50V
C937	1-126-933-11	ELECT	100MF	20%	16V
C938	1-102-129-00	CERAMIC	0.01MF	10%	50V
C939	1-102-129-00	CERAMIC	0.01MF	10%	50V
C940	1-129-716-00	FILM	0.015MF	5%2	00V
C941	1-126-767-11	ELECT	1000MF	20%	16V
C942	1-126-767-11	ELECT	1000MF	20%	16V
C944	1-102-030-00	CERAMIC	330PF	10%	500V
C946	1-162-115-00	CERAMIC	330PF	10%	2KV
		<CONNECTOR>			
CN901	* 1-564-509-11	PLUG, CONNECTOR 6P			
CN902	1-564-513-11	PLUG, CONNECTOR 10P			
CN904	1-564-505-11	PLUG, CONNECTOR 2P			

REF NO.	PART NO.	DESCRIPTION				REMARK
CN905	* 1-580-798-11	CONNECTOR PIN (DY) 6P				
		<DIODE>				
D903	8-719-911-19	DIODE 1SS119-25				
D904	8-719-929-15	DIODE HZS9.1NB2				
D905	8-719-939-07	DIODE ERD38-06				
D906	8-719-988-11	DIODE FE3D				
D907	8-719-988-11	DIODE FE3D				
D908	8-719-951-30	DIODE ERA91-02				
D909	8-719-911-19	DIODE 1SS119-25				
D910	8-719-975-77	DIODE SB340				
D911	8-719-970-89	DIODE DD50R				
D912	8-719-110-31	DIODE RD12ESB2				
D913	8-719-109-89	DIODE RD5.6ESB2				
D914	8-719-109-89	DIODE RD5.6ESB2				
D915	8-719-911-19	DIODE 1SS119-25				
D916	8-719-911-19	DIODE 1SS119-25				
D917	8-719-109-85	DIODE RD5.1ESB2				
		<FERRITEBEAD>				
FB901	1-410-397-21	FERRITE 1.1UH				
FB902	1-410-397-21	FERRITE 1.1UH				
		<IC>				
IC901	8-759-980-58	IC TDA8172				
IC903	8-759-916-25	IC SN74HC32AN				
IC904	8-759-145-58	IC UPC4558C				
		<COIL>				
L901	1-459-111-00	INDUCTOR 0UH				
L902	1-411-667-11	COIL, HORIZONTAL LINEARITY				
L903	1-410-117-31	INDUCTOR 0.68MMH				
		<TRANSISTOR>				
Q901	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q902	8-729-030-02	TRANSISTOR DTC144ESA				
Q903	8-729-015-28	TRANSISTOR IRFI9630GS				
Q904	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q905	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q906	8-729-141-83	TRANSISTOR 2SB1094-LK				
Q907	8-729-209-15	TRANSISTOR 2SD2012				
Q908	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q909	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q910	8-729-820-73	TRANSISTOR 2SC3746				
Q911	8-729-821-07	TRANSISTOR 2SC3997CA				
Q912	8-729-140-50	TRANSISTOR 2SC3209LK				
Q913	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q914	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		<RESISTOR>				
R901	1-215-423-00	METAL	1.2K	1%	1/4W	
R902	1-249-449-11	CARBON	1.5	5%	1/4W	F
R903	1-249-417-11	CARBON	1K	5%	1/4W	
R904	1-249-449-11	CARBON	1.5	5%	1/4W	F
R905	1-249-449-11	CARBON	1.5	5%	1/4W	F
R906	1-247-838-00	CARBON	2K	5%	1/4W	
R907	1-216-373-11	METAL OXIDE	2.2	5%	2W	F
R908	1-216-373-11	METALOXIDE	2.2	5%	2W	F
R909	1-249-435-11	CARBON	33K	5%	1/4W	
R910	1-215-892-11	METALOXIDE	1K	5%	2W	F
R911	1-249-417-11	CARBON	1K	5%	1/4W	
R912	1-249-441-11	CARBON	100K	5%	1/4W	
R913	1-249-429-11	CARBON	10K	5%	1/4W	
R914	1-247-863-91	CARBON	22K	5%	1/4W	
R915	1-247-863-91	CARBON	22K	5%	1/4W	
R916	1-249-443-11	CARBON	0.47	5%	1/4W	F
R917	1-247-692-11	CARBON	22	5%	1/4W	F
R918	1-247-863-91	CARBON	22K	5%	1/4W	
R919	1-249-425-11	CARBON	4.7K	5%	1/4W	
R920	1-249-441-11	CARBON	100K	5%	1/4W	
R921	1-249-441-11	CARBON	100K	5%	1/4W	
R922	1-249-470-11	CARBON	0.47	5%	1/2W	F
R923	1-249-470-11	CARBON	0.47	5%	1/2W	F
R924	1-249-429-11	CARBON	10K	5%	1/4W	
R925	1-249-425-11	CARBON	4.7K	5%	1/4W	
R926	1-249-437-11	CARBON	47K	5%	1/4W	
R927	1-249-417-11	CARBON	1K	5%	1/4W	
R928	1-249-417-11	CARBON	1K	5%	1/4W	
R929	1-249-402-11	CARBON	56	5%	1/4W	
R930	1-249-402-11	CARBON	56	5%	1/4W	
R931	1-249-417-11	CARBON	1K	5%	1/4W	
R932	1-249-417-11	CARBON	1K	5%	1/4W	
R933	1-216-393-00	METAL OXIDE	2.2	5%	3W	F
R934	1-216-424-11	METAL OXIDE	39	5%	1W	F
R935	1-215-912-11	METAL OXIDE	150	5%	3W	F
R936	1-247-807-31	CARBON	100	5%	1/4W	
R937	1-249-401-11	CARBON	47	5%	1/4W	
R938	1-249-421-11	CARBON	2.2K	5%	1/4W	
R939	1-216-448-11	METAL OXIDE	39	5%	2W	F
R940	1-249-476-11	CARBON	1.5	5%	1/2W	F
R941	1-215-908-00	METAL OXIDE	33	5%	3W	F
R942	1-215-908-00	METAL OXIDE	33	5%	3W	F
R943	1-215-908-00	METAL OXIDE	33	5%	3W	F
R944	1-216-447-00	METAL OXIDE	27	5%	2W	F
R945	1-249-429-11	CARBON	10K	5%	1/4W	
R946	1-249-429-11	CARBON	10K	5%	1/4W	
R947	1-249-429-11	CARBON	10K	5%	1/4W	
R948	1-249-406-11	CARBON	120	5%	1/4W	
R949	1-249-421-11	CARBON	2.2K	5%	1/4W	
R950	1-247-791-91	CARBON	22	5%	1/4W	
R951	1-249-428-11	CARBON	8.2K	5%	1/4W	
R952	1-247-807-31	CARBON	100	5%	1/4W	
R953	1-249-435-11	CARBON	33	5%	1/4W	
R954	1-249-434-11	CARBON	27K	5%	1/4W	
R955	1-247-843-11	CARBON	3.3K	5%	1/4W	
R956	1-247-843-11	CARBON	3.3K	5%	1/4W	
R957	1-249-425-11	CARBON	4.7K	5%	1/4W	
R958	1-249-421-11	CARBON	2.2K	5%	1/4W	
R959	1-249-425-11	CARBON	4.7K	5%	1/4W	
R960	1-247-688-11	CARBON	10	5%	1/4W	F
R961	1-247-688-11	CARBON	10	5%	1/4W	F
R962	1-247-863-91	CARBON	22K	5%	1/4W	

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REF NO.	PART NO.	DESCRIPTION			REMARK
R963	1-249-441-11	CARBON	100K	5%	1/4W
R964	1-249-421-11	CARBON	2.2K	5%	1/4W
R965	1-249-419-11	CARBON	1.5K	5%	1/4W
		<VARIABLERESISTOR>			
RV901	1-228-994-00	RES, ADJ, CARBON	10K		
		<TRANSFORMER>			
T901	1-437-207-11	TRANSFORMER, FERRITE (HOT)			
T902	1-423-853-11	TRANSFORMER, FERRITE (HDT)			
		<TESTPIN>			
TP901	1-535-570-11	PIN, TERMINAL			
TP902	1-535-570-11	PIN, TERMINAL			
TP903	1-535-570-11	PIN, TERMINAL			
TP904	1-535-570-11	PIN, TERMINAL			
**********					
	* A-1195-119-A	P COMPLETE PWB (20inch)			
		**********			
	* 4-043-154-01	HOLDER, IC			
	4-363-414-00	SPACER, MICA			
	4-382-854-01	SCREW (M3X8), P, SW (+)			
	7-682-949-01	SCREW +PSW 3X10			
	7-682-950-01	SCREW +PSW 3X12			
	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3			
		<CAPACITOR>			
C901	1-102-129-00	CERAMIC	0.01MF	10%	50V
C902	1-126-942-61	ELECT	1000MF	20%	25V
C903	1-126-968-11	ELECT	100MF	20%	50V
C904	1-136-177-00	FILM	1MF	5%	50V
C905	1-126-959-11	ELECT	0.47MF	20%	50V
C906	1-126-933-11	ELECT	100MF	20%	16V
C907	1-130-728-00	FILM	0.0022MF	5%	50V
C908	1-102-129-00	CERAMIC	0.01MF	10%	50V
C909	1-126-942-61	ELECT	1000MF	20%	25V
C910	1-106-220-00	MYLAR	0.1MF	10%	100V
C912	1-106-387-00	MYLAR	0.068MF	10%	200V
C913	1-123-024-21	ELECT	33MF		160V
C914	1-106-383-00	MYLAR	0.047MF	10%	200V
C915	1-136-155-00	FILM	0.015MF	5%	50V
C917	1-126-767-11	ELECT	1000MF	20%	16V
C918	1-126-767-11	ELECT	1000MF	20%	16V
C919	1-136-165-00	FILM	0.1MF	5%	50V
C920	1-136-165-00	FILM	0.1MF	5%	50V
C921	1-136-165-00	FILM	0.1MF	5%	50V
C922	1-104-966-11	ELECT	10MF	0	200V
C923	1-115-524-11	FILM	1.5MF	5%	250V
C924	1-136-173-00	FILM	0.47MF	5%	50V
C925	1-136-155-00	FILM	0.015MF	5%	50V
C926	1-107-914-11	ELECT	1000MF	20%	25V
C927	1-136-481-11	MYLAR	0.0022MF	10%	100V

REF NO.	PART NO.	DESCRIPTION			REMARK
C928	1-136-750-11	FILM	0.0047MF	3%	2KV
C929	1-161-754-00	CERAMIC	0.001MF	10%	2KV
C930	1-126-967-11	ELECT	47MF	20%	16V
C931	1-102-129-00	CERAMIC	0.01MF	10%	50V
C932	1-162-558-11	CERAMIC	100PF	10%	2KV
C933	1-136-553-11	FILM	0.0015MF	5%	630V
C934	1-126-967-11	ELECT	47MF	20%	16V
C935	1-162-558-11	CERAMIC	100PF	10%	2KV
C936	1-102-129-00	CERAMIC	0.01MF	10%	50V
C937	1-126-933-11	ELECT	100MF	20%	16V
C938	1-102-129-00	CERAMIC	0.01MF	10%	50V
C939	1-102-129-00	CERAMIC	0.01MF	10%	50V
C940	1-129-716-00	FILM	0.015MF	5%	200V
C941	1-126-767-11	ELECT	1000MF	20%	16V
C942	1-126-767-11	ELECT	1000MF	20%	16V
C943	1-115-522-11	FILM	1MF	5%	250V
C944	1-102-030-00	CERAMIC	330PF	10%	500V
		<CONNECTOR>			
CN901	* 1-564-509-11	PLUG, CONNECTOR 6P			
CN902	1-564-513-11	PLUG, CONNECTOR 10P			
CN903	* 1-573-986-11	PIN, CONNECTOR (PC BOARD) 5P			
CN904	1-564-505-11	PLUG, CONNECTOR 2P			
CN905	* 1-568-536-11	PLUG (MINIATURE DY) 6P			
		<DIODE>			
D903	8-719-911-19	DIODE 1SS119-25			
D904	8-719-929-15	DIODE HZS9.1NB2			
D905	8-719-939-07	DIODE ERD38-06			
D906	8-719-988-11	DIODE FE3D			
D907	8-719-988-11	DIODE FE3D			
D908	8-719-951-30	DIODE ERA91-02			
D909	8-719-911-19	DIODE 1SS119-25			
D910	8-719-975-77	DIODE SB340			
D911	8-719-970-89	DIODE DD50R			
D912	8-719-110-31	DIODE RD12ESB2			
D913	8-719-109-89	DIODE RD5.6ESB2			
D914	8-719-109-89	DIODE RD5.6ESB2			
D915	8-719-911-19	DIODE 1SS119-25			
D916	8-719-911-19	DIODE 1SS119-25			
D917	8-719-109-85	DIODE RD5.1ESB2			
		<FERRITE BEAD>			
FB901	1-410-397-21	FERRITE 1.1UH			
FB902	1-410-397-21	FERRITE 1.1UH			
		<IC>			
IC901	8-759-980-58	IC TDA8172			
IC903	8-759-916-25	IC SN74HC32AN			
IC904	8-759-145-58	IC UPC4558C			
		<COIL>			
L901	1-406-818-11	INDUCTOR 0UH			
L903	1-410-117-31	INDUCTOR 0.68MMH			
L904	1-409-690-11	COIL, HORIZONTAL LINEARITY			

REF NO.	PART NO.	DESCRIPTION				REMARK
L905	1-409-691-11	COIL, HORIZONTAL LINEARITY				
		<TRANSISTOR>				
Q901	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q902	8-729-030-02	TRANSISTOR DTC144ESA				
Q903	8-729-015-28	TRANSISTOR IRFI9630GS				
Q904	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q905	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q906	8-729-141-83	TRANSISTOR 2SB1094-LK				
Q907	8-729-209-15	TRANSISTOR 2SD2012				
Q908	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q909	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q910	8-729-820-73	TRANSISTOR 2SC3746				
Q911	8-729-821-07	TRANSISTOR 2SC3997CA				
Q912	8-729-140-50	TRANSISTOR 2SC3209LK				
Q913	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q914	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		<RESISTOR>				
R901	1-215-425-00	METAL	1.5K	1%	1/4W	
R902	1-249-449-11	CARBON	1.5	5%	1/4W	F
R903	1-249-417-11	CARBON	1K	5%	1/4W	
R904	1-249-449-11	CARBON	1.5	5%	1/4W	F
R905	1-249-449-11	CARBON	1.5	5%	1/4W	F
R906	1-249-425-11	CARBON	4.7K	5%	1/4W	
R907	1-216-371-00	METAL OXIDE	1.5	5%	2W	F
R908	1-216-371-00	METAL OXIDE	1.5	5%	2W	F
R909	1-249-435-11	CARBON	33K	5%	1/4W	
R910	1-216-453-00	METAL OXIDE	270	5%	2W	F
R911	1-249-417-11	CARBON	1K	5%	1/4W	
R912	1-249-441-11	CARBON	100K	5%	1/4W	
R913	1-249-429-11	CARBON	10K	5%	1/4W	
R914	1-247-863-91	CARBON	22K	5%	1/4W	
R915	1-247-863-91	CARBON	22K	5%	1/4W	
R916	1-249-443-11	CARBON	0.47	5%	1/4W	F
R917	1-247-692-11	CARBON	22	5%	1/4W	F
R918	1-247-863-91	CARBON	22K	5%	1/4W	
R919	1-249-427-11	CARBON	6.8K	5%	1/4W	
R920	1-249-441-11	CARBON	100K	5%	1/4W	
R921	1-249-441-11	CARBON	100K	5%	1/4W	
R922	1-249-470-11	CARBON	0.47	5%	1/2W	F
R923	1-249-470-11	CARBON	0.47	5%	1/2W	F
R924	1-249-429-11	CARBON	10K	5%	1/4W	
R925	1-249-425-11	CARBON	4.7K	5%	1/4W	
R926	1-249-437-11	CARBON	47K	5%	1/4W	
R927	1-249-417-11	CARBON	1K	5%	1/4W	
R928	1-249-417-11	CARBON	1K	5%	1/4W	
R929	1-249-402-11	CARBON	56	5%	1/4W	
R930	1-249-402-11	CARBON	56	5%	1/4W	
R931	1-249-417-11	CARBON	1K	5%	1/4W	
R932	1-249-417-11	CARBON	1K	5%	1/4W	
R933	1-216-393-00	METAL OXIDE	2.2	5%	3W	F
R934	1-216-424-11	METAL OXIDE	39	5%	1W	F
R935	1-215-912-11	METAL OXIDE	150	5%	3W	F
R936	1-247-807-31	CARBON	100	5%	1/4W	
R937	1-249-401-11	CARBON	47	5%	1/4W	
R938	1-249-421-11	CARBON	2.2K	5%	1/4W	
R939	1-216-448-11	METAL OXIDE	39	5%	2W	F
R940	1-249-476-11	CARBON	1.5	5%	1/2W	F
R941	1-216-399-00	METAL OXIDE	6.8	5%	3W	F
R942	1-216-399-00	METAL OXIDE	6.8	5%	3W	F
R943	1-216-399-00	METAL OXIDE	6.8	5%	3W	F
R944	1-216-447-00	METAL OXIDE	27	5%	2W	F
R945	1-249-429-11	CARBON	10K	5%	1/4W	
R946	1-249-429-11	CARBON	10K	5%	1/4W	
R947	1-249-429-11	CARBON	10K	5%	1/4W	
R948	1-249-406-11	CARBON	120	5%	1/4W	
R949	1-249-421-11	CARBON	2.2K	5%	1/4W	
R950	1-247-791-91	CARBON	22	5%	1/4W	
R951	1-249-428-11	CARBON	8.2K	5%	1/4W	
R952	1-247-807-31	CARBON	100	5%	1/4W	
R953	1-249-435-11	CARBON	33K	5%	1/4W	
R954	1-249-434-11	CARBON	27K	5%	1/4W	
R955	1-247-843-11	CARBON	3.3K	5%	1/4W	
R956	1-247-843-11	CARBON	3.3K	5%	1/4W	
R957	1-249-425-11	CARBON	4.7K	5%	1/4W	
R958	1-249-421-11	CARBON	2.2K	5%	1/4W	
R959	1-249-425-11	CARBON	4.7K	5%	1/4W	
R960	1-247-688-11	CARBON	10	5%	1/4W	F
R961	1-247-688-11	CARBON	10	5%	1/4W	F
R962	1-247-863-91	CARBON	22K	5%	1/4W	
R963	1-249-441-11	CARBON	100K	5%	1/4W	
R964	1-249-421-11	CARBON	2.2K	5%	1/4W	
R965	1-249-419-11	CARBON	1.5K	5%	1/4W	
		<VARIABLE RESISTOR>				
RV901	1-228-994-00	RES, ADJ, CARBON	10K			
		<TRANSFORMER>				
T901	1-437-207-11	TRANSFORMER, FERRITE (HOT)				
T902	1-423-853-11	TRANSFORMER, FERRITE (HDT)				
		<TEST PIN>				
TP901	1-535-570-11	PIN, TERMINAL				
TP902	1-535-570-11	PIN, TERMINAL				
TP903	1-535-570-11	PIN, TERMINAL				
TP904	1-535-570-11	PIN, TERMINAL				

****

* A-1390-736-A X MOUNTED PC BOARD
****

<CONNECTOR>

CN690 * 1-564-518-11 PLUG, CONNECTOR 3P

<DIODE>

D691 8-719-023-78 DIODE SEL3810DLC05
D692 8-719-023-78 DIODE SEL3810DLC05

X Y

REF NO.	PART NO.	DESCRIPTION	REMARK
D693	8-719-023-78	DIODE SEL3810DLC05	
D694	8-719-023-78	DIODE SEL3810DLC05	

****

* A-1394-887-A Y COMPL
****

<CAPACITOR>

C2400	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C2402	1-126-401-11	ELECT CHIP	1MF	20%	50V
C2403	1-126-401-11	ELECT CHIP	1MF	20%	50V
C2404	1-126-401-11	ELECT CHIP	1MF	20%	50V
C2405	1-126-401-11	ELECT CHIP	1MF	20%	50V
C2406	1-163-031-11	CERAMIC CHIP	0.01MF		50V

<CONNECTOR>

CN2400	1-563-345-11	CONNECTOR, D-SUB 9P
CN2401	1-563-345-11	CONNECTOR, D-SUB 9P
CN2402	1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P

<DIODE>

D2400	8-719-158-20	DIODE RD6.2SB1
D2401	8-719-158-20	DIODE RD6.2SB1
D2403	8-719-158-20	DIODE RD6.2SB1
D2404	8-719-158-20	DIODE RD6.2SB1
D2405	8-719-037-55	DIODE RD33SB-T1
D2406	8-719-158-20	DIODE RD6.2SB1
D2407	8-719-158-20	DIODE RD6.2SB1
D2408	8-719-404-49	DIODE MA111
D2409	8-719-404-49	DIODE MA111

<FILTER>

FL2400	1-233-313-11	FERRITE 0UH
FL2401	1-233-313-11	FERRITE 0UH
FL2402	1-233-313-11	FERRITE 0UH
FL2403	1-233-313-11	FERRITE 0UH

<IC>

IC2400	8-759-289-43	IC LTC490CS8
IC2401	8-759-335-70	IC ADM232LAR-REEL

<JACK>

J2400	* 1-526-575-00	SOCKET, PLUG 1P

<RESISTOR>

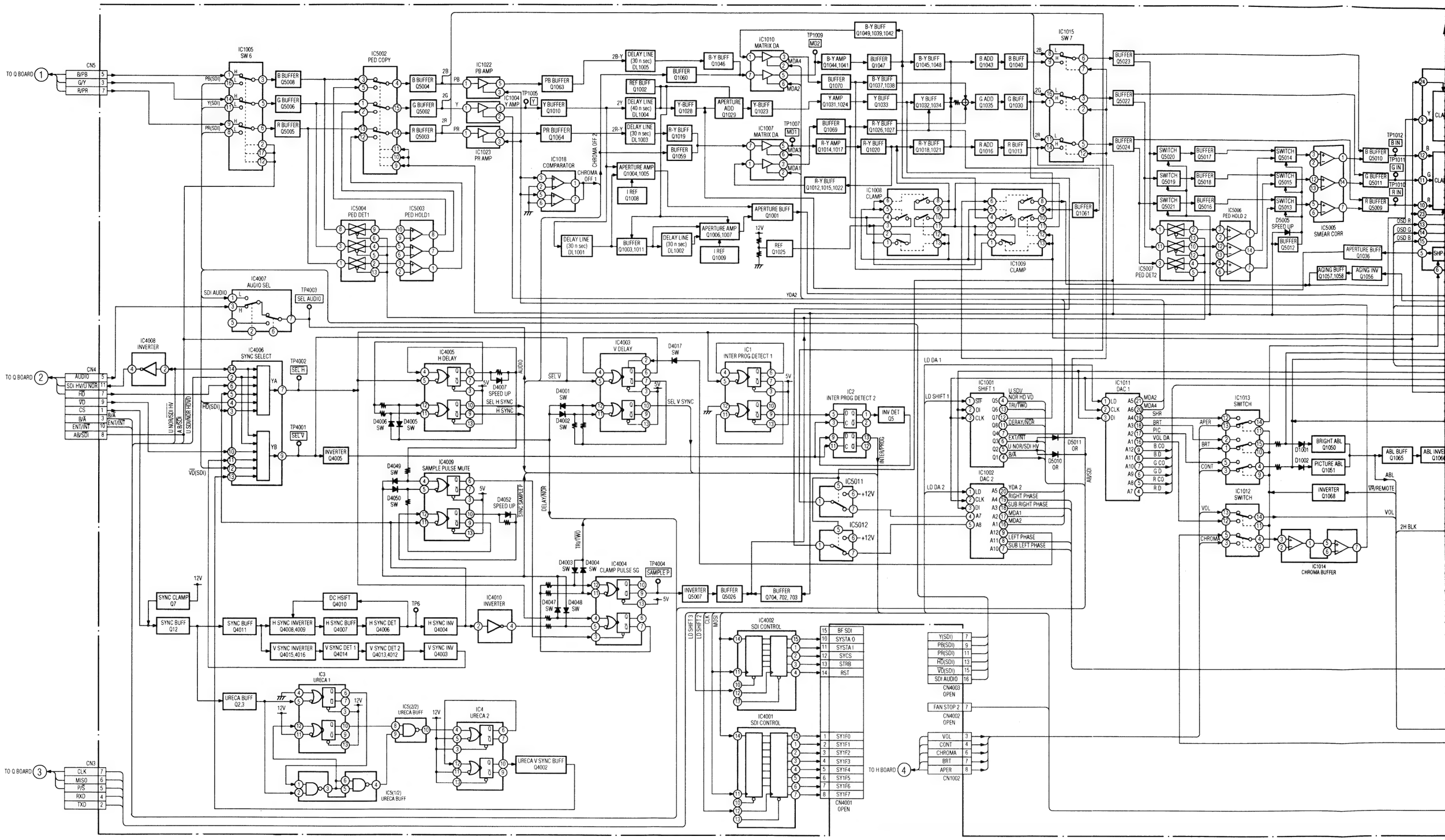
R2402	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2403	1-216-049-91	RES,CHIP	1K	5%	1/10W
R2406	1-216-025-91	RES,CHIP	100	5%	1/10W
R2407	1-216-025-91	RES,CHIP	100	5%	1/10W
R2408	1-216-025-91	RES,CHIP	100	5%	1/10W
R2409	1-216-295-91	SHORT			
R2410	1-216-295-91	SHORT			
R2412	1-216-295-91	SHORT			
R2413	1-216-295-91	SHORT			
R2414	1-216-025-91	RES,CHIP	100	5%	1/10W
R2415	1-216-025-91	RES,CHIP	100	5%	1/10W
R2416	1-216-073-00	RES,CHIP	10K	5%	1/10W
R2417	1-216-073-00	RES,CHIP	10K	5%	1/10W

****

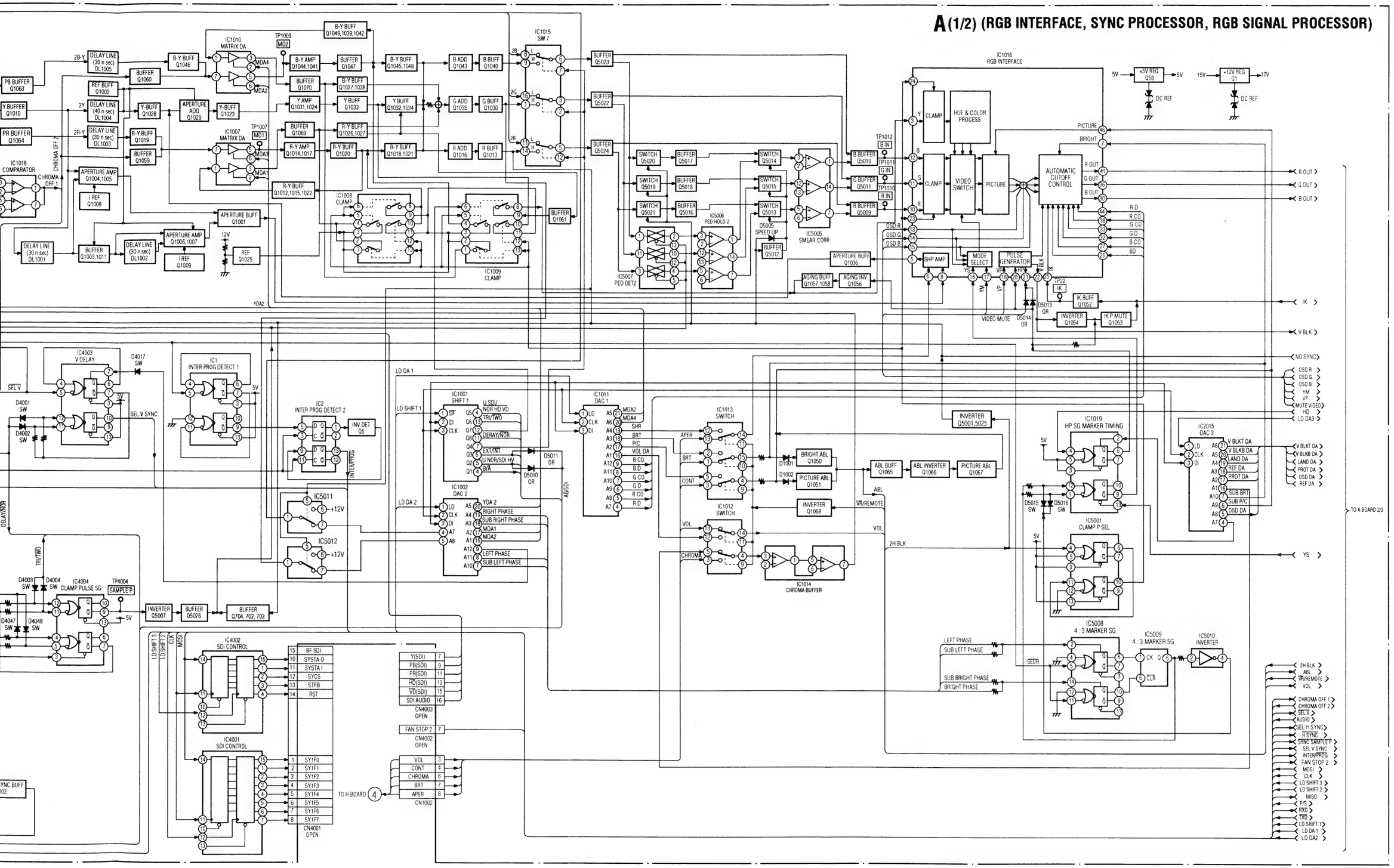
ACCESSORIES & PACKING MATERIALS
****

	1-765-268-11	CORD, CONNECTION	
⚠	1-765-718-11	CORD SET, POWER	
	1-769-073-21	CORD, CONNECTION	
	2-990-242-01	HOLDER (B), PLUG	
	* 3-704-285-01	BAG (STANDARD), PROTECTION	14inch
	3-860-346-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH,SPANISH)	
	3-862-992-11	MANUAL, INTERFACE	
	* 4-026-824-01	BAG, PROTECTION	20inch
	4-044-040-03	LABEL, TALLY	
	* 4-059-440-01	PLATE, BLIND	
	4-059-471-01	HOLDER (16:9), TALLY	
	* 4-060-913-01	CLOTH, VIBRATION PROOF	
	* 4-060-917-01	CUSHION (UPPER) (ASSY)	14inch
	* 4-060-918-01	CUSHION (LOWER) (ASSY)	14inch
	* 4-060-924-01	CUSHION (UPPER) (ASSY)	20inch
	* 4-060-925-01	CUSHION (LOWER) (ASSY)	20inch
	* 4-064-469-01	PANEL (A), CONNECTOR	
	4-065-492-01	INDIVIDUAL CARTON	
	* 4-380-432-21	BAG, PROTECTION	20inch
	* 4-381-155-11	BAG, PROTECTION	14inch
	* A-1394-887-A	Y COMLETE	
	X-4034-762-1	BEZEL (16:9) ASSY	20inch
	X-4034-763-1	BEZEL (16:9) ASSY	14inch

SECTION 10
BLOCK DIAGRAMS

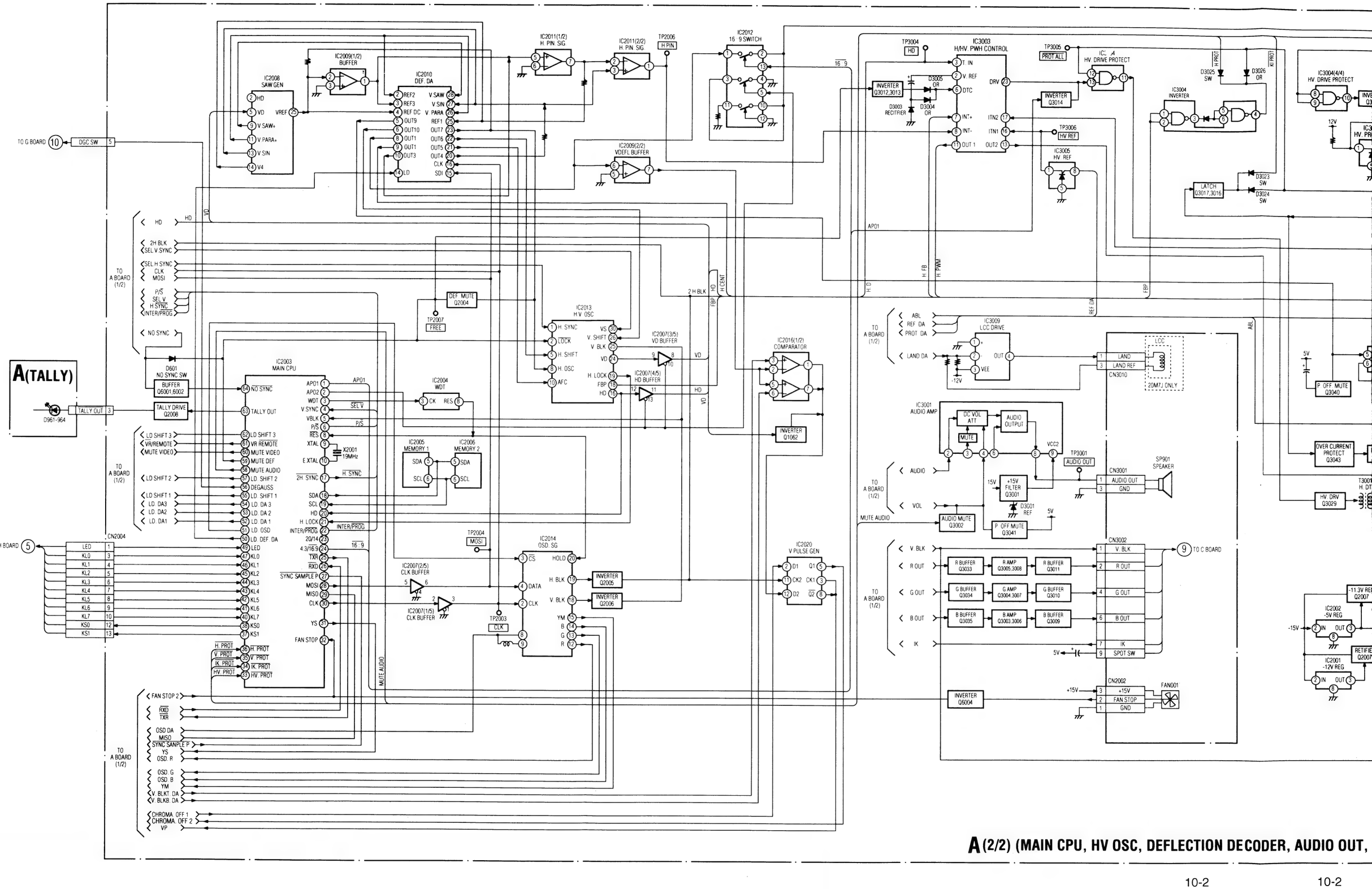


A (1/2) (RGB INTERFACE, SYNC PROCESSOR, RGB SIGNAL PROCESSOR)



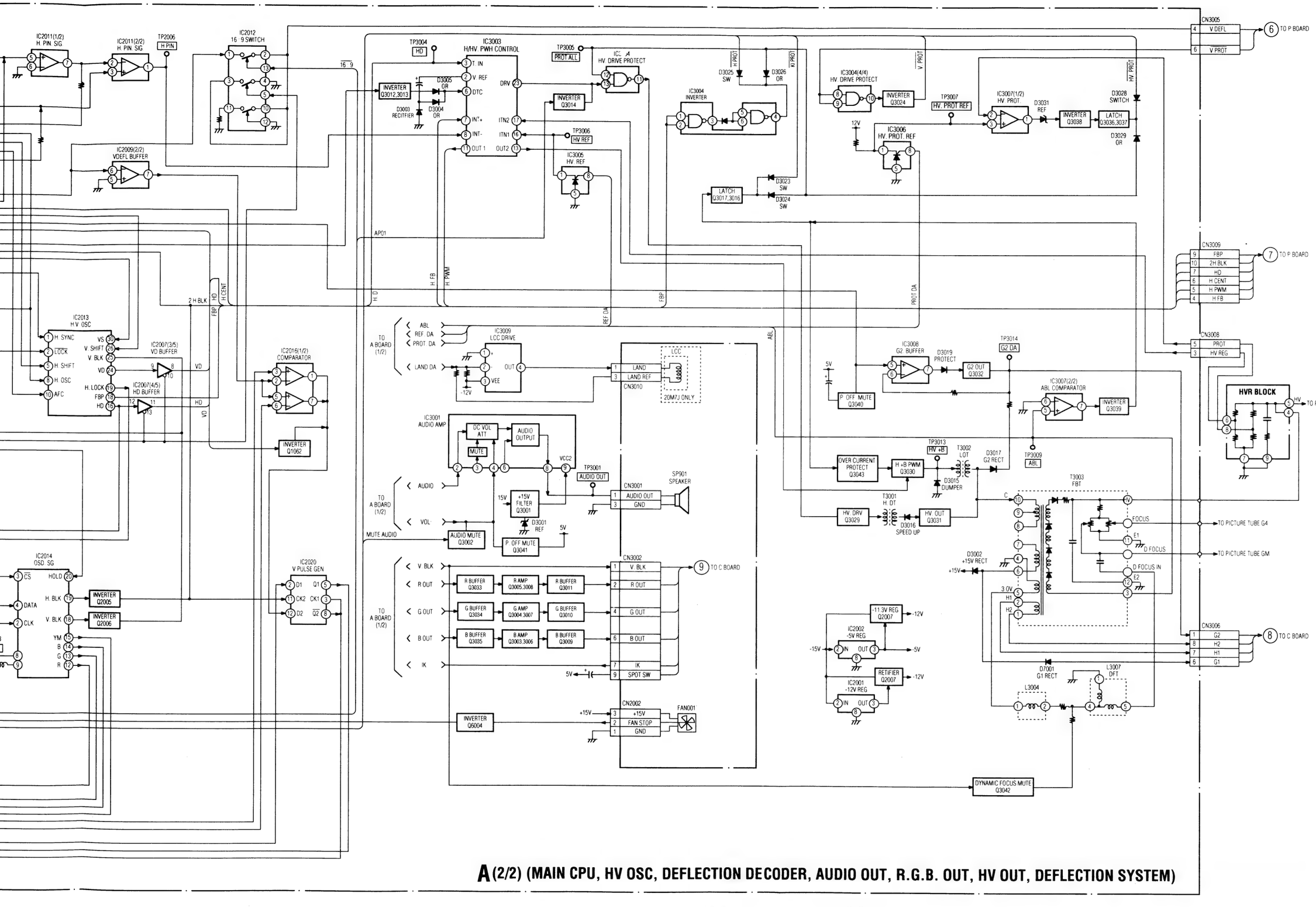
A BLOCK (1/2)

A(2/2) A(2/2)



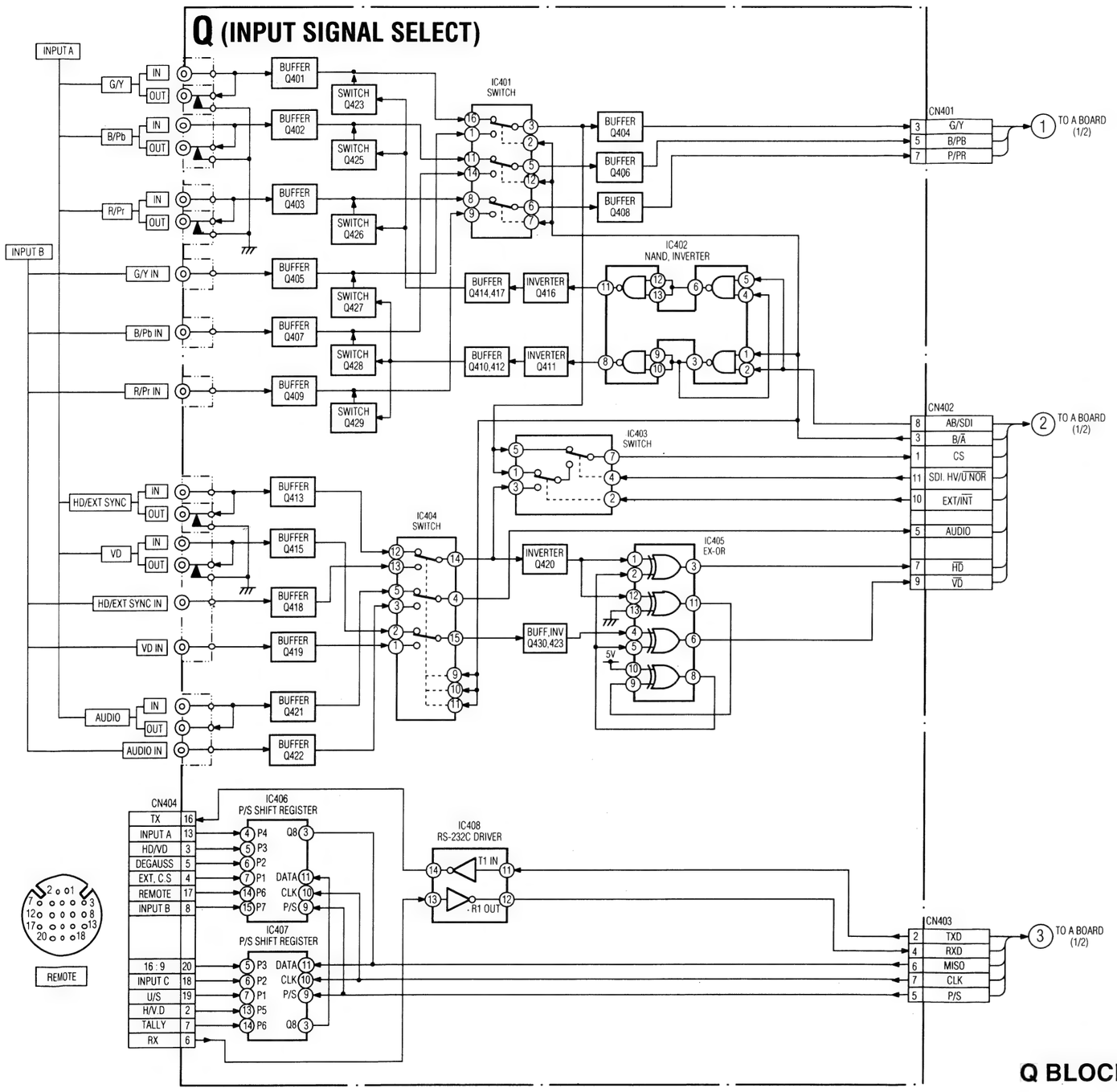
A(2/2) (MAIN CPU, HV OSC, DEFLECTION DECODER, AUDIO OUT,

10-2 10-2



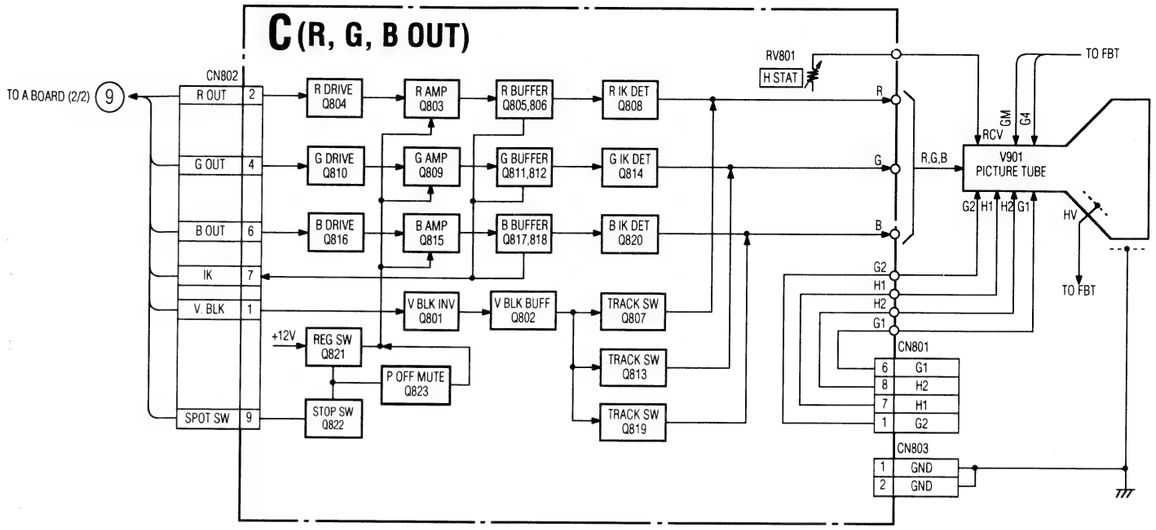
A(2/2) (MAIN CPU, HV OSC, DEFLECTION DECODER, AUDIO OUT, R.G.B. OUT, HV OUT, DEFLECTION SYSTEM)

A BLOCK (2/2)

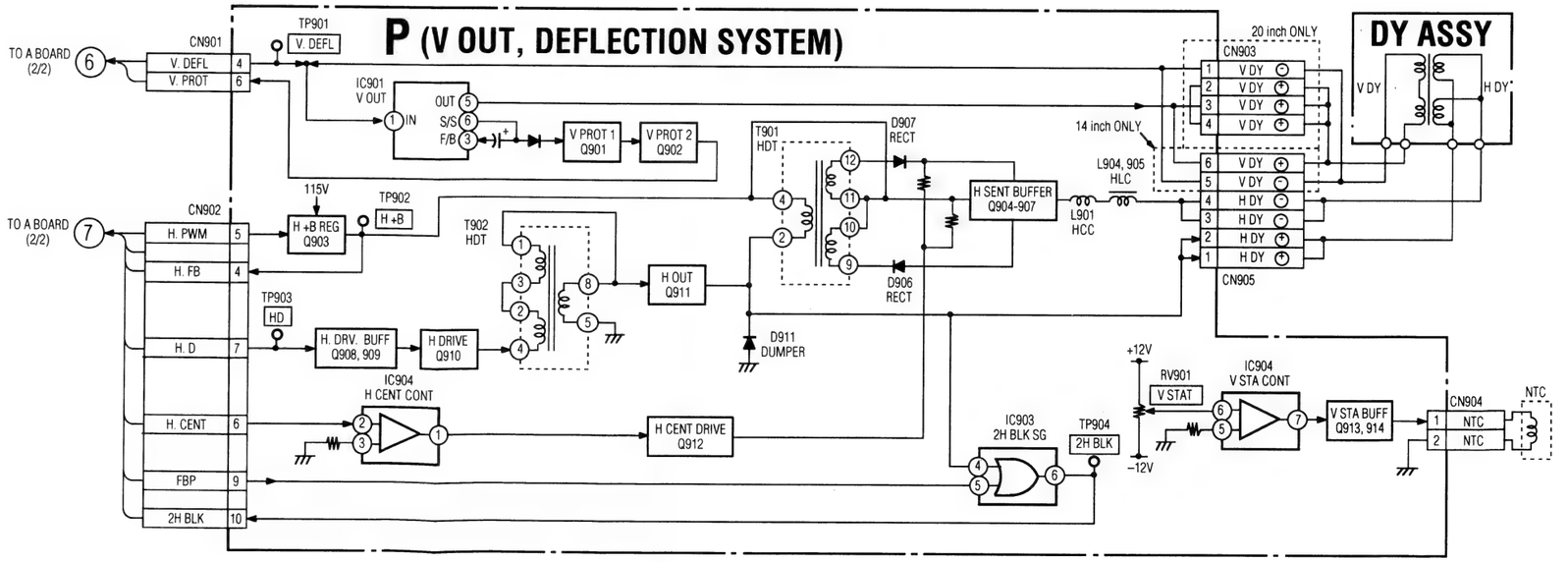

Q (INPUT SIGNAL SELECT)
INPUT A
G/Y
B/Pb
R/Pr
INPUT B
G/Y IN
B/Pb IN
R/Pr IN
HD/EXT SYNC
VD
HD/EXT SYNC IN
VD IN
AUDIO
AUDIO IN
IN
OUT
BUFFER Q401
BUFFER Q402
BUFFER Q403
BUFFER Q405
BUFFER Q407
BUFFER Q409
BUFFER Q413
BUFFER Q415
BUFFER Q418
BUFFER Q419
BUFFER Q421
BUFFER Q422
SWITCH Q423
SWITCH Q425
SWITCH Q426
SWITCH Q427
SWITCH Q428
SWITCH Q429
IC401 SWITCH
IC404 SWITCH
BUFFER Q404
BUFFER Q406
BUFFER Q408
BUFFER Q414,417
INVERTER Q416
BUFFER Q410,412
INVERTER Q411
INVERTER Q420
BUFF,INV Q430,423
IC402 NAND, INVERTER
IC403 SWITCH
IC405 EX-OR
5V
CN401
3 G/Y
5 B/PB
7 P/PR
1 TO A BOARD (1/2)
CN402
8 AB/SDI
3 B/A
1 CS
11 SDI. HV/UNOR
10 EXT/INT
5 AUDIO
7 HD
9 VD
2 TO A BOARD (1/2)
CN404
TX 16
INPUT A 13
HD/VD 3
DEGAUSS 5
EXT, C.S 4
REMOTE 17
INPUT B 8
16 : 9 20
INPUT C 18
U/S 19
H/V.D 2
TALLY 7
RX 6
REMOTE
IC406 P/S SHIFT REGISTER
IC407 P/S SHIFT REGISTER
P4
P3
P2
P1
P6
P7
P5
DATA
CLK
P/S
Q8
IC408 RS-232C DRIVER
T1 IN
R1 OUT
CN403
2 TXD
4 RXD
6 MISO
7 CLK
5 P/S
3 TO A BOARD (1/2)

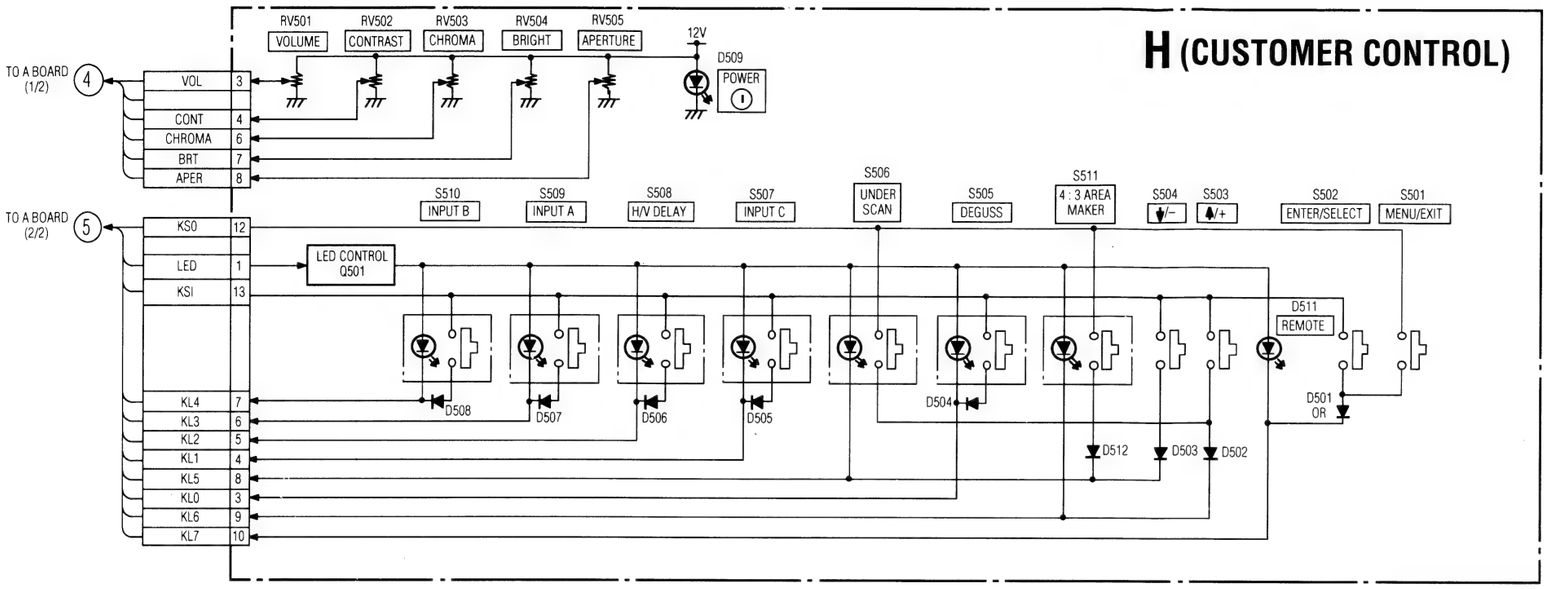
Q BLOCK

10-3

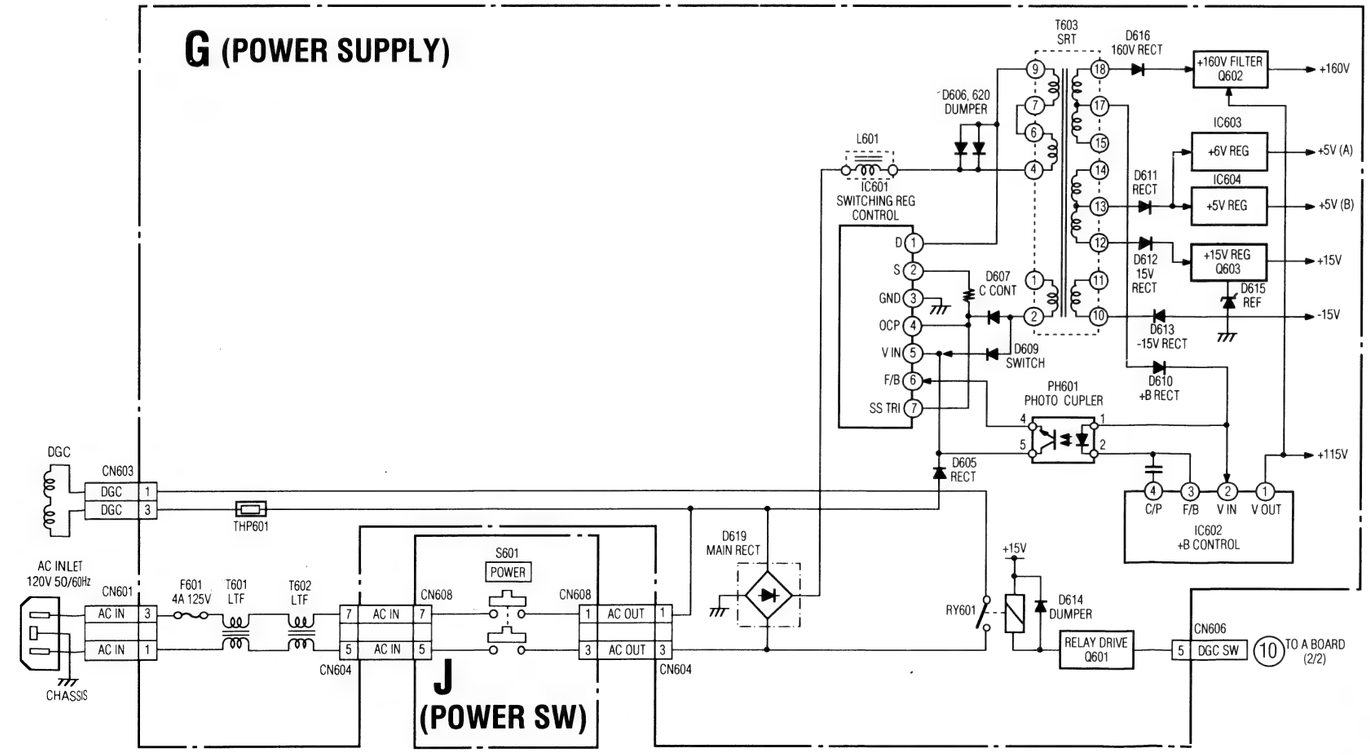

C (R, G, B OUT)
TO A BOARD (2/2)
9
CN802
R OUT 2
G OUT 4
B OUT 6
IK 7
V. BLK 1
SPOT SW 9
R DRIVE Q804
G DRIVE Q810
B DRIVE Q816
R AMP Q803
G AMP Q809
B AMP Q815
R BUFFER Q805,806
G BUFFER Q811,812
B BUFFER Q817,818
R IK DET Q808
G IK DET Q814
B IK DET Q820
V BLK INV Q801
V BLK BUFF Q802
TRACK SW Q807
TRACK SW Q813
TRACK SW Q819
+12V
REG SW Q821
P OFF MUTE Q823
STOP SW Q822
RV801
H STAT
R
G
B
R,G,B
TO FBT
RCV
GM
G4
V901
PICTURE TUBE
G2 H1 H2 G1
HV
TO FBT
G2
H1
H2
G1
CN801
6 G1
8 H2
7 H1
1 G2
CN803
1 GND
2 GND

C BLOCK

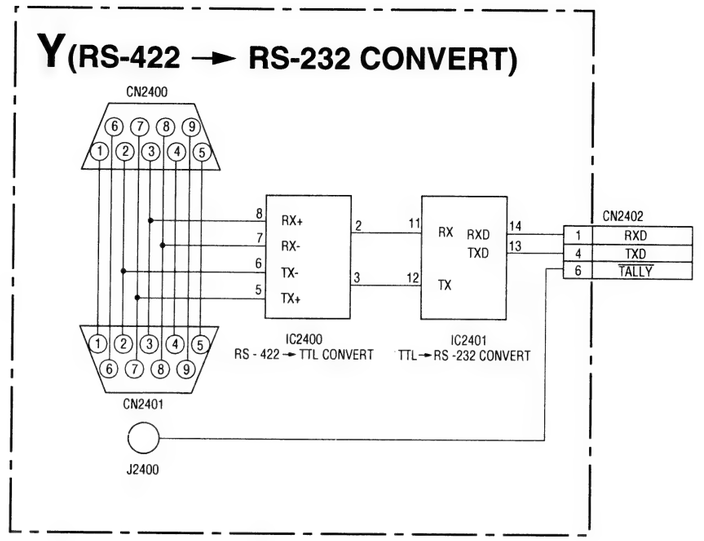

P (V OUT, DEFLECTION SYSTEM)
TO A BOARD (2/2)
6
CN901
V. DEFL 4
V. PROT 6
TP901
V. DEFL
IC901
V OUT
IN
OUT
S/S
F/B
V PROT 1 Q901
V PROT 2 Q902
T901
HDT
D907
RECT
D906
RECT
20 inch ONLY
14 inch ONLY
CN903
1 V DY
2 V DY
3 V DY
4 V DY
6 V DY
5 V DY
4 H DY
3 H DY
2 H DY
1 H DY
CN905
DY ASSY
V DY
H DY
H SENT BUFFER Q904-907
L904, 905
HLC
L901
HCC
TO A BOARD (2/2)
7
CN902
H. PWM 5
H. FB 4
H. D 7
H. CENT 6
FBP 9
2H BLK 10
115V
H +B REG Q903
TP902
H +B
TP903
HD
H. DRV. BUFF Q908, 909
H DRIVE Q910
T902
HDT
H OUT Q911
D911
DUMPER
IC904
H CENT CONT
H CENT DRIVE Q912
IC903
2H BLK SG
TP904
2H BLK
+12V
RV901
V STAT
-12V
IC904
V STA CONT
V STA BUFF Q913, 914
CN904
NTC
1 NTC
2 NTC



H BLOCK



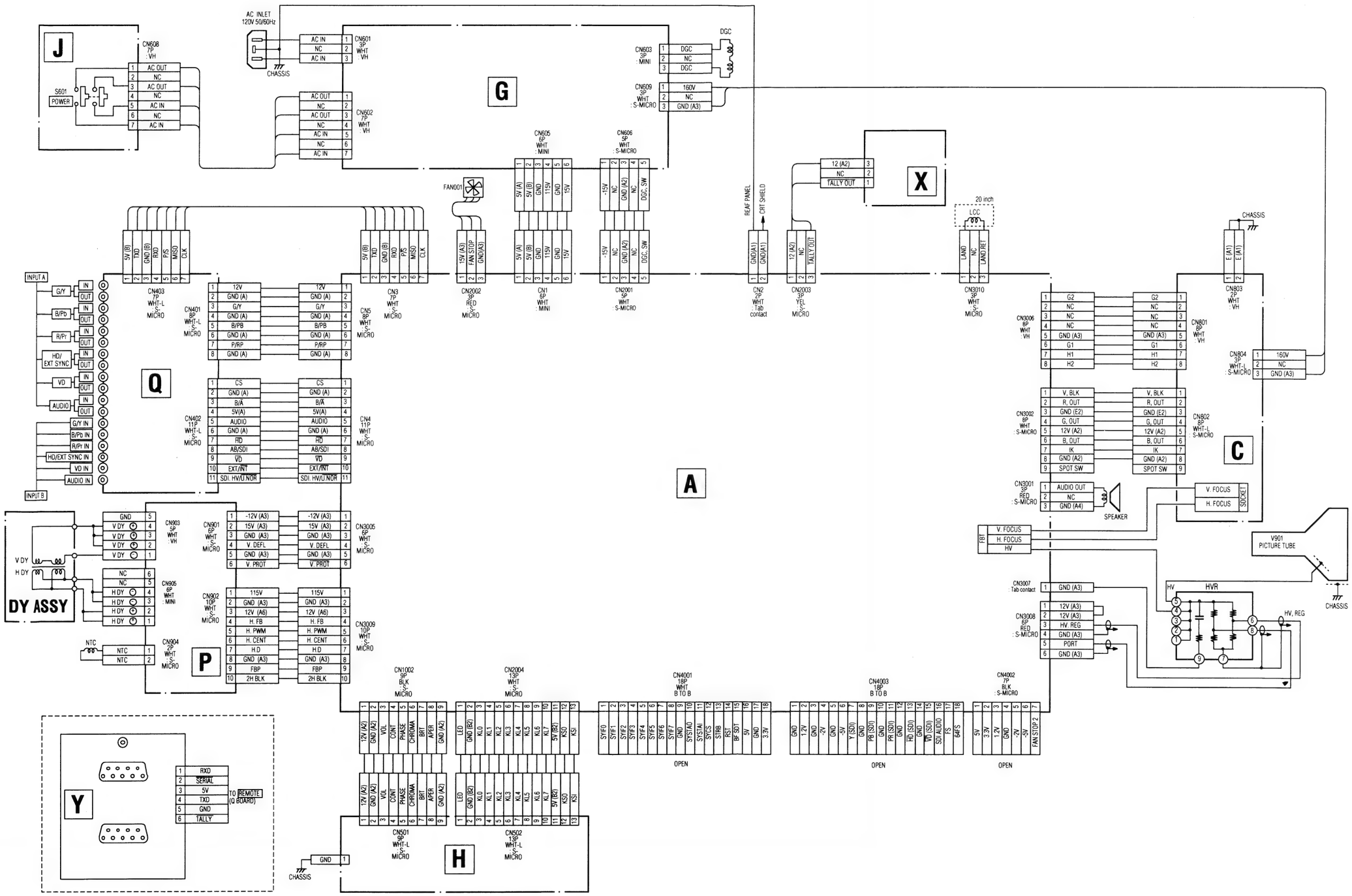
G BLOCK


Y (RS-422 → RS-232 CONVERT)
CN2400
6 7 8 9
1 2 3 4 5
8 RX+
7 RX-
6 TX-
5 TX+
2 11
3 12
RX RXD
TXD
TX
14 13
CN2402
1 RXD
4 TXD
6 TALLY
1 2 3 4 5
6 7 8 9
CN2401
IC2400
RS - 422 → TTL CONVERT
IC2401
TTL → RS -232 CONVERT
J2400

Y BLOCK

SECTION 11
DIAGRAMS

11-1. FRAME SCHEMATIC DIAGRAM



11-1

11-2. PRINTED WIRING BOARDS/SCHEMATIC DIAGRAMS

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4W

- All resistors are in ohms. (1M: 1000kΩ, 1k: 1000Ω)
- : nonflammable resistor.
- Chip resister are 1/10W unless otherwise noted.
- : fusible resistor.
- △ : internal component.
- : panel designation and adjustment repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- METAL CHIP (:RN, :RN-CP) resister in 1%, 0.5%, 1/4W unless otherwise specified.
- The components identified by ⋈ in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
  Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ , make the necessary adjustments indicated, If results do not meet the specified value change the component identified by ⋈ and repeat the adjustment until the specified value is achieved. (Refer to page 4-1.)

Part replaced (◪)	Checked
T603, IC602 ..... G board	(+B VOLTAGE)
R3060, R3061, R3062, R3063, R3122, R3153, IC2015, IC3003, IC3005 ..... A board	(HVR)
R3078, R3079, R3080, R3083, R3183, IC3006, IC3007 .. A board	(HV PROT.)
R3084, R3085, R3139, R3140, R3154, R3155 ..... A board	(IK PROT.)
R1183, R1192, R1193, R1209, R1224, R1225, R1289, R1290, R3107, R3109, R3110, R3152, R3158, R3200, R3201 ... A board	(ABL)

- All voltages are in V.
- Reading are taken with Component color-bar signal (R.G.B, HD, VD) input.
- Voltage are dc with respect to ground unless otherwise noted.
- Voltage variation may be noted due to normal production tolerancd.
- : B+, B– line
- : signal path
- Circled numbers are waveforms reference.

Reference information

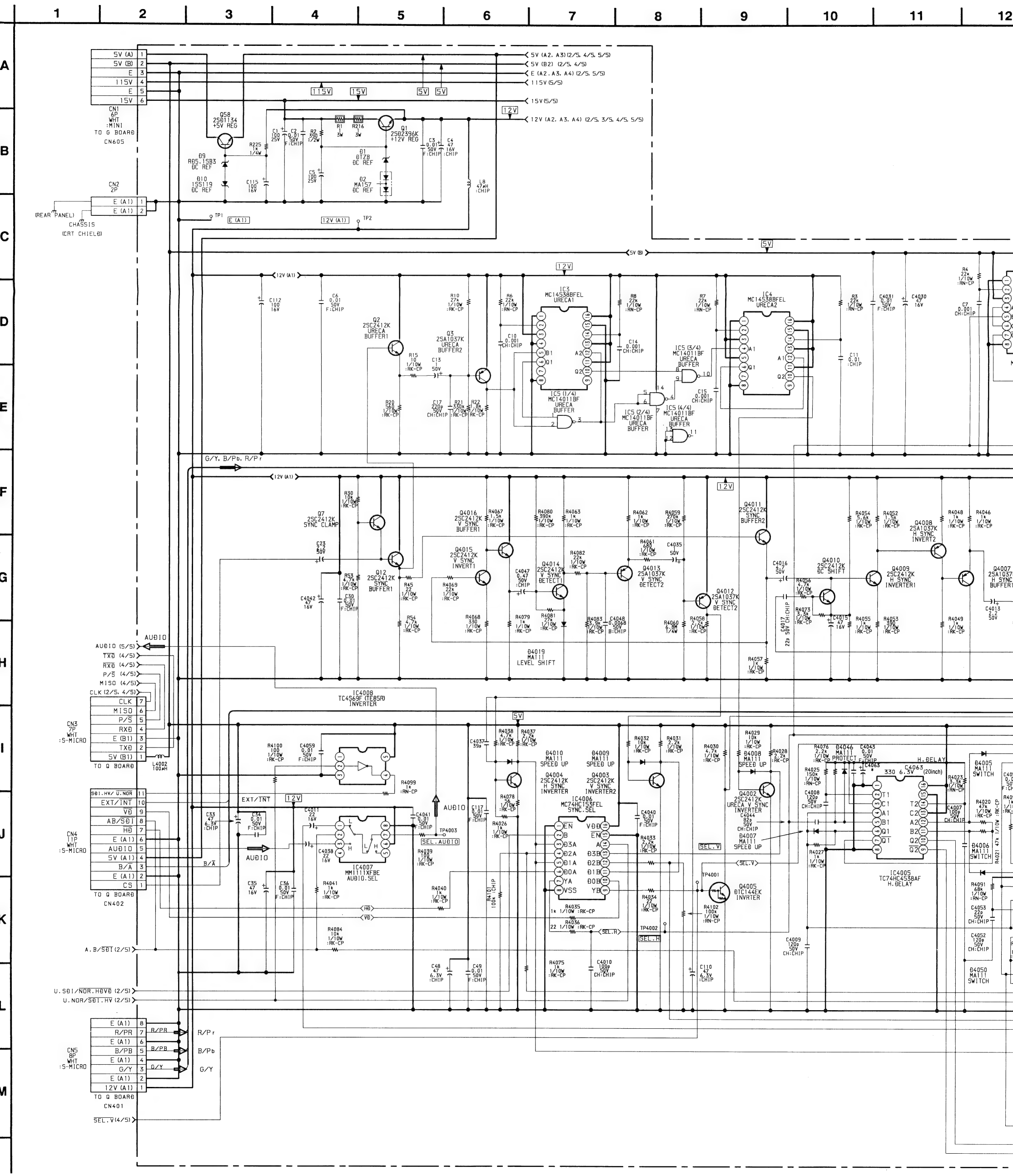
RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RW	NONFLAMMABLE WIREWOUND
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

The components identified marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

11-2

- Refer to page 11-8, 9 for Printed Wiring Board
- Refer to page 11-4 for Waveforms
- Refer to page 11-9, 10 for IC Block Diagrams



10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20

A (1/5) (AUDIO SELECT, H/V SYNC DELAY URECA)

IC1 MC14538BFEL INTER PROG DETECT1

IC2 MC14013BF INTER PROG DETECT2

D3 MA111 EQ PULSE MASK

Q5 2SA1037K INVERT DETECT

G/Y, B/Pb, R/Pr

INTER/PROG (4/5)

B/A (2/5)

EXT/INT (2/5)

R/PR (2/5)

B/PB (2/5)

G/Y (2/5)

SEL.H (2/5)

TP17

Q4008 2SA1037K H SYNC INVERT2

Q4009 2SC2412K H SYNC INVERTER1

Q4007 2SA1037K H SYNC BUFFER1

Q4006 2SA1037K H SYNC DETECT

D4018 MA111 LEVEL SHIFT

TP6

IC4002 TC74VHC595F (EL) SDI CONTROL

IC4001 TC74VHC595F (EL) SDI CONTROL

3.3V

CN4001 18P

SY1F0 SY1F1 SY1F2 SY1F3 SY1F4 SY1F5 SY1F6 SY1F7 GND SYSTA0 SYSTA1 SYCS STRB RST BF SDT 5V GND 3.3V

OPEN

MOSI (2/5, 4/5)

CLK (2/5, 4/5)

LD.SHIFT2 (4/5)

LD.SHIFT3 (4/5)

30/NOR (2/5)

CN4002 8P BLK :S-MICRO

5V 3.3V 1.2V GND -2V -5V FAN STOP2 GND

OPEN

FAN STOP2 (4/5)

CN4003 18P

GND 1.2V GND -2V GND -5V Y (SDI) GND PB (SDI) GND PR (SDI) GND HD (SDI) GND VD (SDI) SDI AUDIO FS 64FS

OPEN

PR (SDI)(2/5)

PB (SDI)(2/5)

Y (SDI)(2/5)

DELAY/NOR(2/5)

SEL.V.SYNC(4/5)

TRI/TWO (2/5)

SYNC SAMPLE P (4/5)

SAMPLE.P (3/5)

SEL.H.SYNC(4/5)

H.SYNC (4/5)

IC4004 TC74HC4538AF (EL) CLAMP.P.SG

IC4005 TC74HC4538AF H.DELAY

IC4010 TC4S69F (TE85R) INVERTER

IC4003 MC14538BFEL V.DELAY

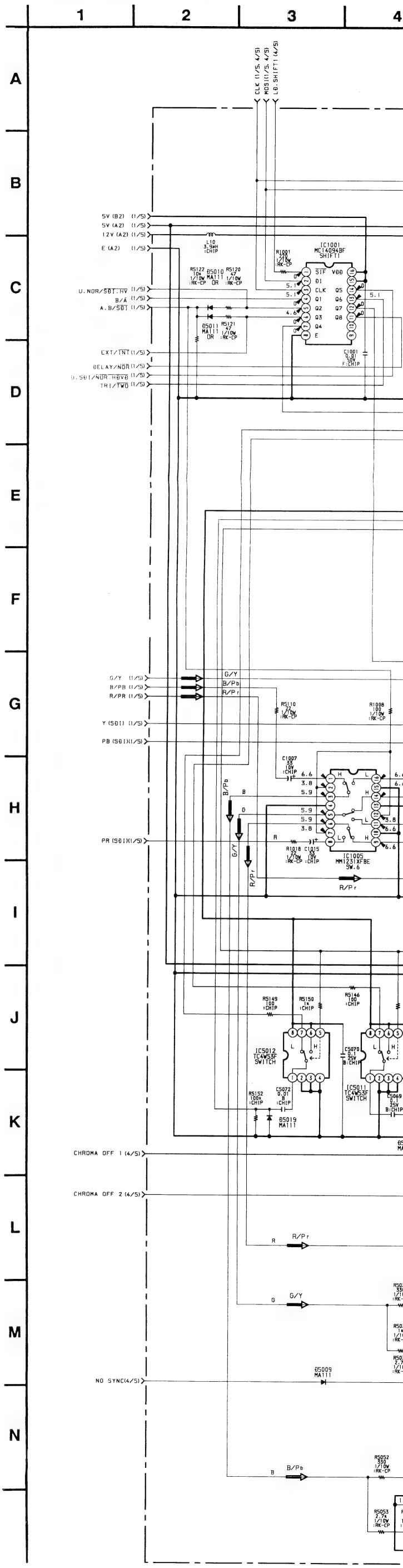
IC4009 TC74HC4538AF (EL) SAMPLE P MUTE

B-SS9602<U/C>-A-P1

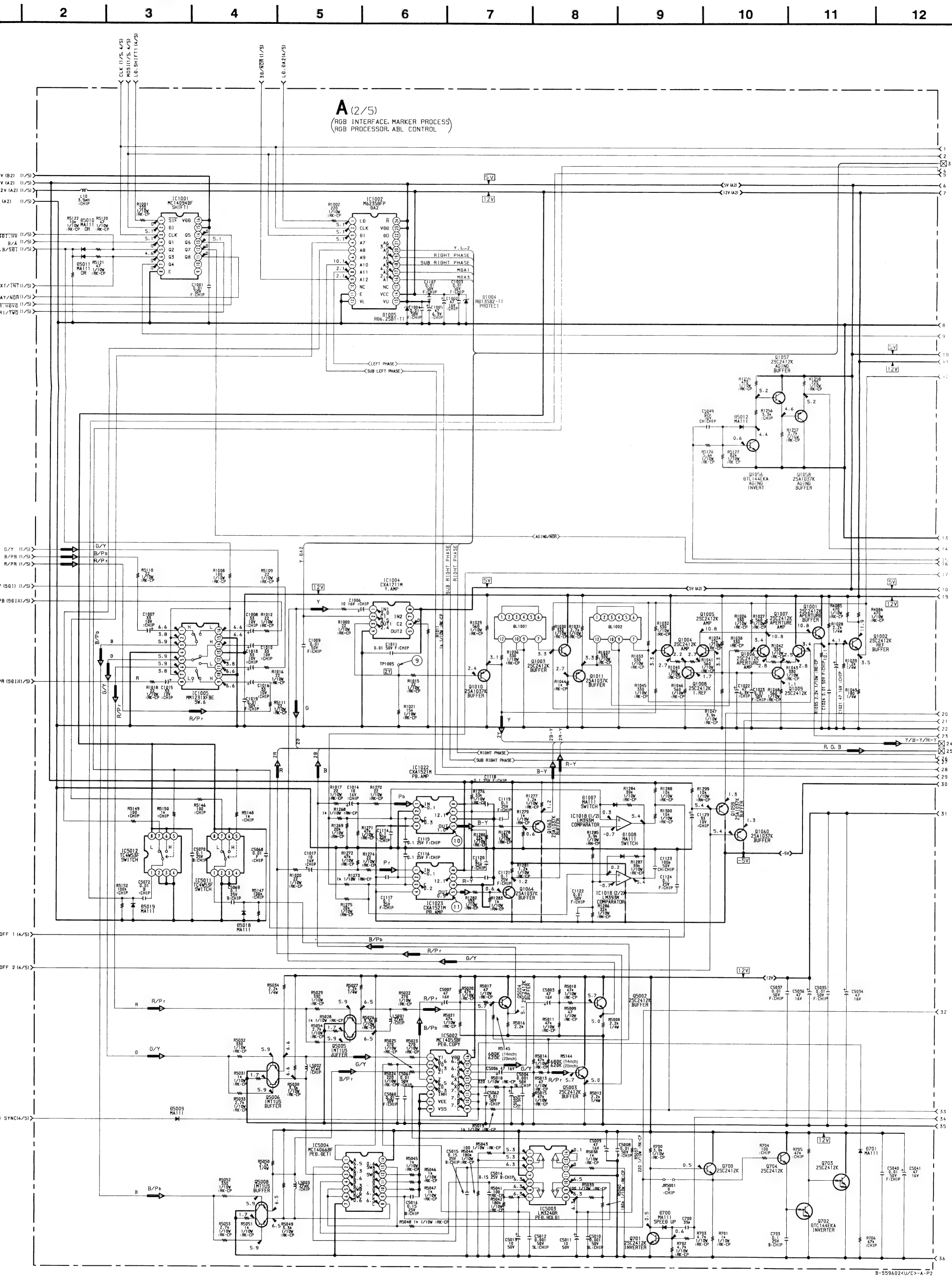
A Board Waveforms

① 960mVp-p (H)	② 960mVp-p (H)	③ 960mVp-p (H)
④ 5.4Vp-p (H)	⑤ 5.1Vp-p (H)	⑥ 5.1Vp-p (H)
⑦ 5Vp-p (H)	⑧ 11.4Vp-p (H)	⑨ 780mVp-p (H)
⑩ 850mVp-p (H)	⑪ 850mVp-p (H)	⑫ 390mVp-p (H)
⑬ 700mVp-p (H)	⑭ 380mVp-p (H)	⑮ 700mVp-p (H)
⑯ 670mVp-p (H)	⑰ 670mVp-p (H)	⑱ 650mVp-p (H)
⑲ 650mVp-p (H)	⑳ 650mVp-p (H)	㉑ 1.1Vp-p (V)
㉒ 3.7Vp-p (V)	㉓ ???Vp-p (??)	㉔ 4.8Vp-p (19MHz)
㉕ 5Vp-p (V)	㉖ 5.1Vp-p (H)	㉗ 2Vp-p (V)
㉘ 2.1Vp-p (V)	㉙ 2.1Vp-p (V)	㉚ 1.1Vp-p (V)
㉛ 4.2Vp-p (V)	㉜ 370mVp-p (V)	㉝ 4Vp-p (H)
㉞ 2.3Vp-p (V)	㉟ 5Vp-p (V)	㊱ 5Vp-p (H)
㊲ 5.3Vp-p (V)	㊳ 3Vp-p (H)	㊴ 3.3Vp-p (H)
㊵ 3Vp-p (H)	㊶ 5.1Vp-p (H)	㊷ 110Vp-p (H)
㊸ 6Vp-p (V)	㊹ 1000Vp-p (H)	

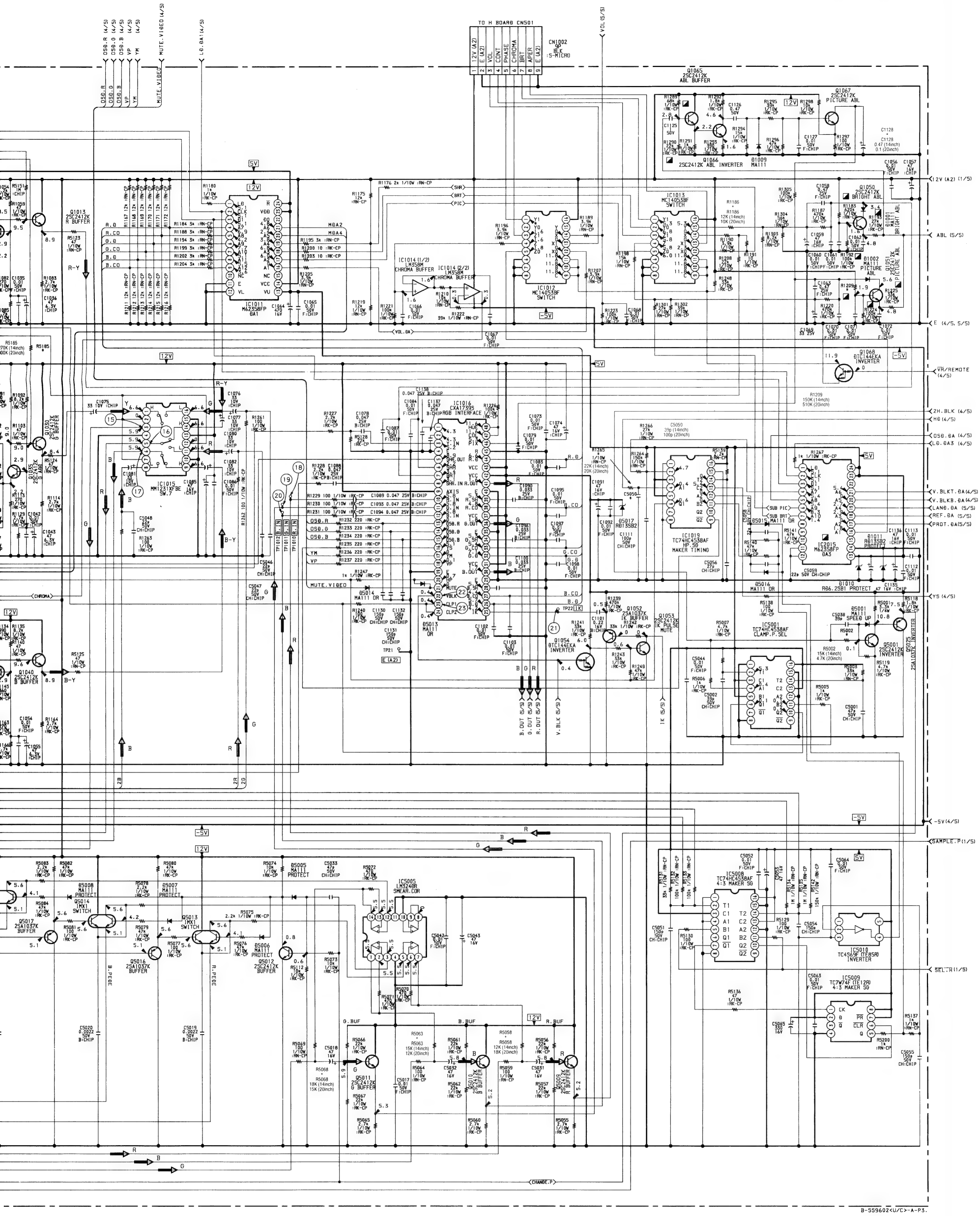
- Refer to page 11-8, 9 for Printed Wiring Board
- Refer to page 11-4 for Waveforms
- Refer to page 11-9, 10 for IC Block Diagrams



page 11-8, 9 for Printed Wiring Board
page 11-4 for Waveforms
page 11-9, 10 for IC Block Diagrams



- Refer to page 11-8, 9 for Printed Wiring Board
- Refer to page 11-4 for Waveforms
- Refer to page 11-9, 10 for IC Block Diagrams


9
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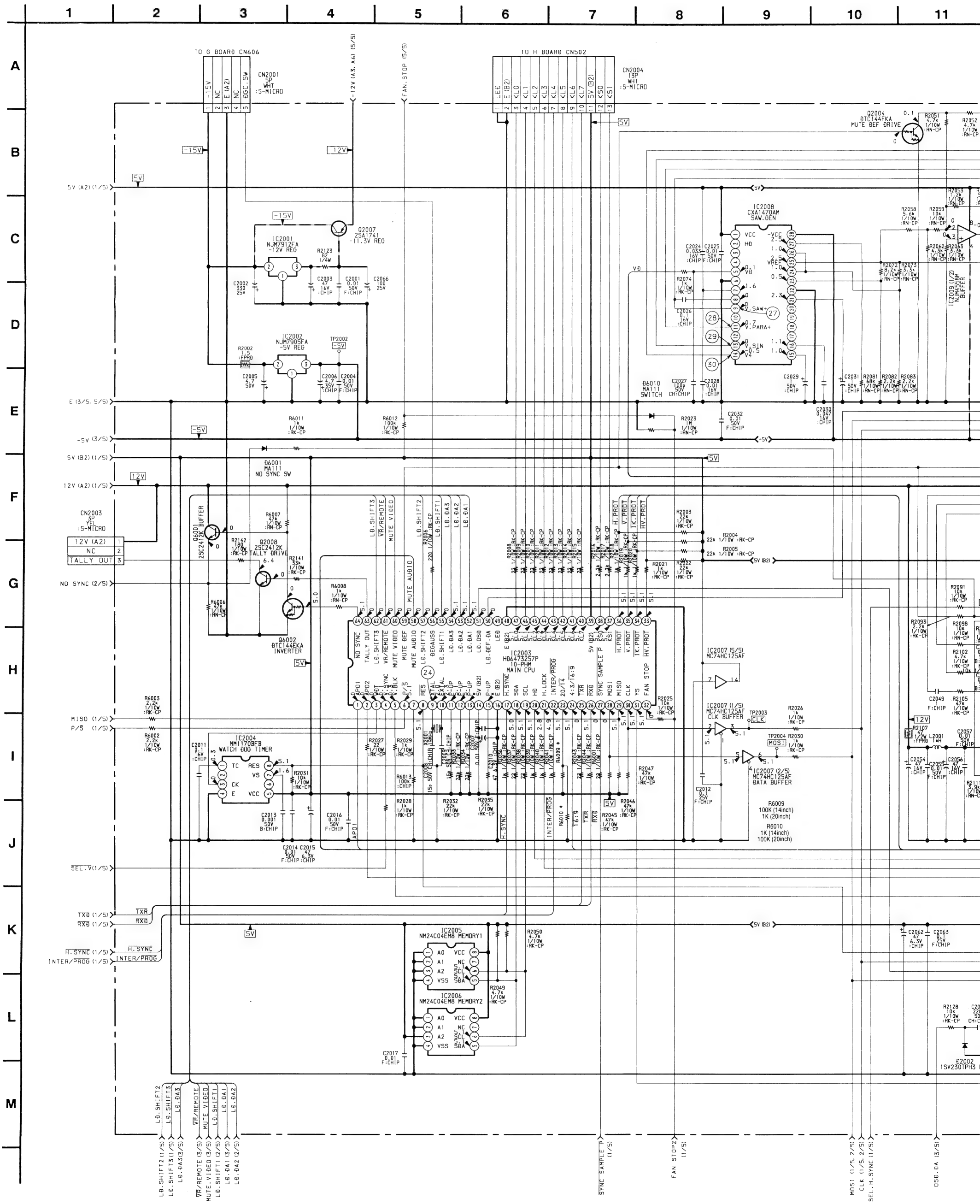
TO H BOARD CN501
CN1002 9P BLK :S-MICRO
Q1065 2SC2412K ABL BUFFER
Q1067 2SC2412K PICTURE ABL
Q1066 2SC2412K ABL INVERTER
D1009 MA111
Q1013 2SC2412K R BUFFER
IC1011 M62358FP BA1
IC1014 (1/2) LM358M CHROMA BUFFER
IC1014 (2/2) LM358M CHROMA BUFFER
IC1012 MC14053BF SWITCH
IC1013 MC14053BF SWITCH
Q1050 2SC2412K BRIGHT ABL
Q1051 2SC2412K PICTURE ABL
Q1068 DTC144EKA INVERTER
IC1015 MM1231XFBE SW.7
IC1016 CXA1739S RGB INTERFACE
Q1040 2SC2412K B BUFFER
D5014 MA111 OR
D5013 MA111 OR
Q1054 DTC144EKA INVERTER
Q1052 2SA1037K IK BUFFER
Q1053 2SC2412K IK PULSE MUTE
D5017 RD13SB2
IC1019 TC74HC4538AF HP.SG MAKER TIMING
D5016 MA111 OR
IC2015 M62358FP BA3
D1011 RD13SB2 PROTECT
D1010 RD6.2SB1 PROTECT
IC5001 TC74HC4538AF CLAMP.P.SEL
D5001 MA111 SPEED UP
Q5001 2SC2412K INVERTER
Q5002 2SA1037K INVERTER
12V (A2) (1/5)
ABL (5/5)
E (4/5, 5/5)
VR/REMOTE (4/5)
2H.BLK (4/5)
HG (4/5)
OSD.BA (4/5)
LD.BA3 (4/5)
V.BLKT.BA(4/5)
V.BLKB.BA(4/5)
LANG.BA (5/5)
REF.BA (5/5)
PROT.BA(5/5)
YS (4/5)
-5V(4/5)
SAMPLE.P(1/5)
SEL.R(1/5)
B.OUT (5/5)
G.OUT (5/5)
R.OUT (5/5)
V.BLK (5/5)
IK (5/5)
VOL (5/5)
MUTE.VIDEO (4/5)
LD.BA1(4/5)
Q5017 2SA1037K BUFFER
D5008 MA111 PROTECT
Q5014 IMX1 SWITCH
Q5016 2SA1037K BUFFER
D5007 MA111 PROTECT
Q5013 IMX1 SWITCH
D5005 MA111 PROTECT
D5006 MA111 PROTECT
Q5012 2SC2412K BUFFER
IC5005 LM324DR SMEAR.COR
Q5011 2SC2412K G BUFFER
Q5010 2SC2412K B BUFFER
Q5009 2SC2412K R BUFFER
IC5008 TC74HC4538AF 4:3 MAKER SG
IC5010 TC4S69F (TE85R) INVERTER
IC5009 TC7W74F (TE12R) 4:3 MAKER SG
CHANGE.P
B-SS9602<U/C>-A-P3.

- Refer to page 11-8, 9 for Printed Wiring Board
- Refer to page 10-4 for Waveforms
- Refer to page 10-9, 10 for IC Block Diagrams



10 11 12 13 14 15 16 17 18 19 20 21

A (4/5) (MAIN CPU, MEMORY) (H/V OSC, SAW GEN)

Q2004 DTC144EKA MUTE DEF DRIVE

IC2010 CXA8021M DEF.DA

IC2009 (1/2) NJM4558M BUFFER

IC2011 (1/2) LM358M H PIN SG

IC2011 (2/2) LM358M H PIN SG

IC2012 MC14066BF 16:9 SW

IC2009 (2/2) NJM4558M V DEFL BUFFER

IC2013 CXA1543M H/V.OSC

IC2007 (3/5) MC74HC125AF VD BUFFER

IC2007 (4/5) MC74HC125AF HD BUFFER

IC2016 (1/2) LM393M COMPARATOR

IC2016 (2/2) LM393M COMPARATOR

IC2020 MC74HC74AF VP.GEN

Q1062 DTC144EKA INVERTER

IC2014 μPD6451AGT-632-E2 OSD SG

Q2005 DTC144EKA INVERTER

Q2006 DTC144EKA INVERTER

D2001 MA111 PROTECT

D2002 1SV230TPH3 REF

16:9 MUTE AUDIO

H.PROT

V.PROT

IK.PROT

HV.PROT

V.DEFL (5/5)

H.PIN (5/5)

APC (5/5)

H.CENT (5/5)

G2.DA (5/5)

MUTE.DEF(5/5)

HD (5/5)

2H.BLK (5/5)

FBP (5/5)

VP (3/5)

CHROMA OFF 2 (2/5)

CHROMA OFF 1 (2/5)

HD (3/5)

MOSI (1/5, 2/5)

CLK (1/5, 2/5)

SEL.H.SYNC (1/5)

OSD.DA (3/5)

YS (3/5)

OSD.R (3/5)

OSD.G (3/5)

OSD.B (3/5)

YM (3/5)

ZH.BLK (3/5)

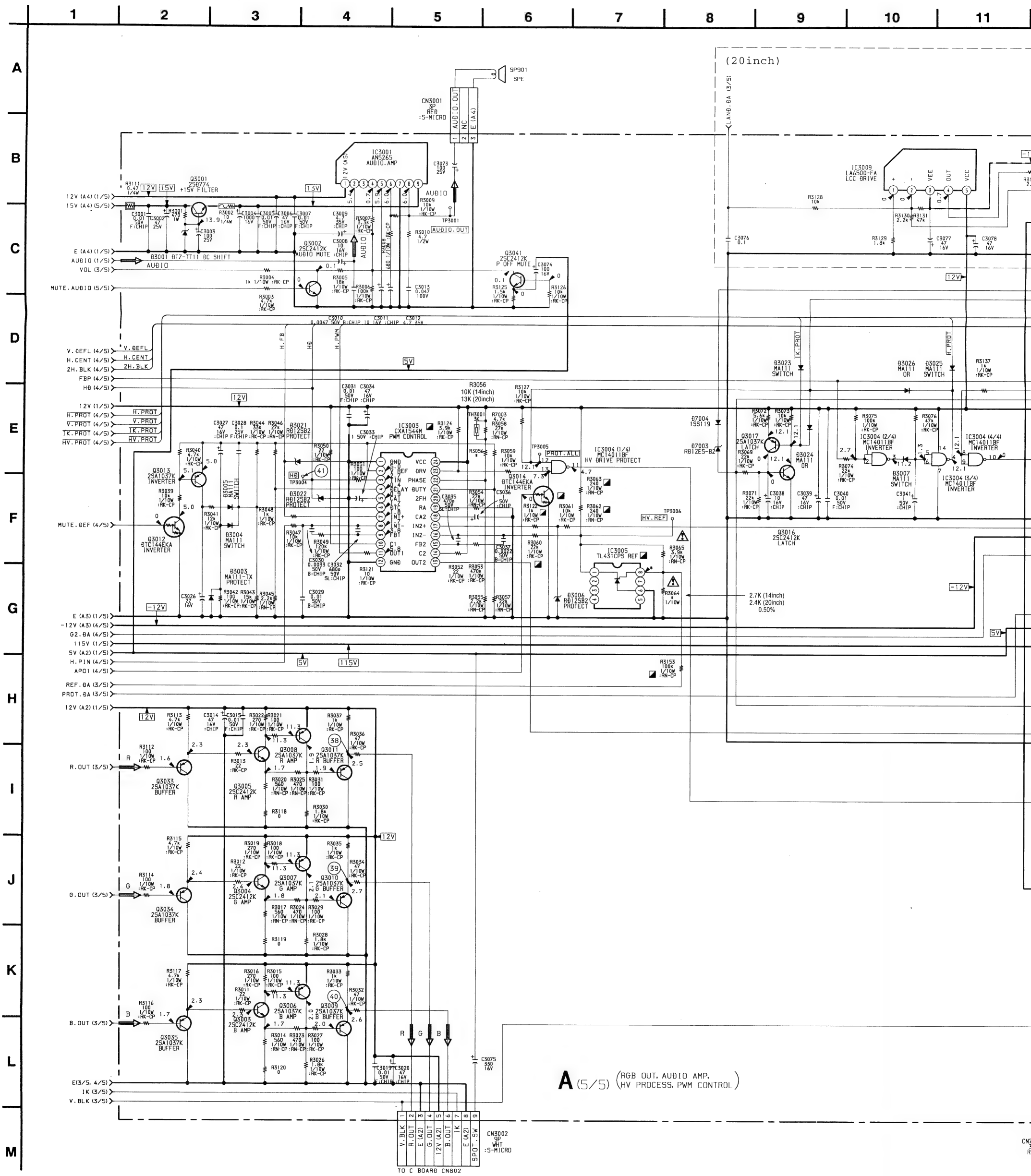
SEL.V.SYNC (1/5)

V.BLKT.DA (3/5)

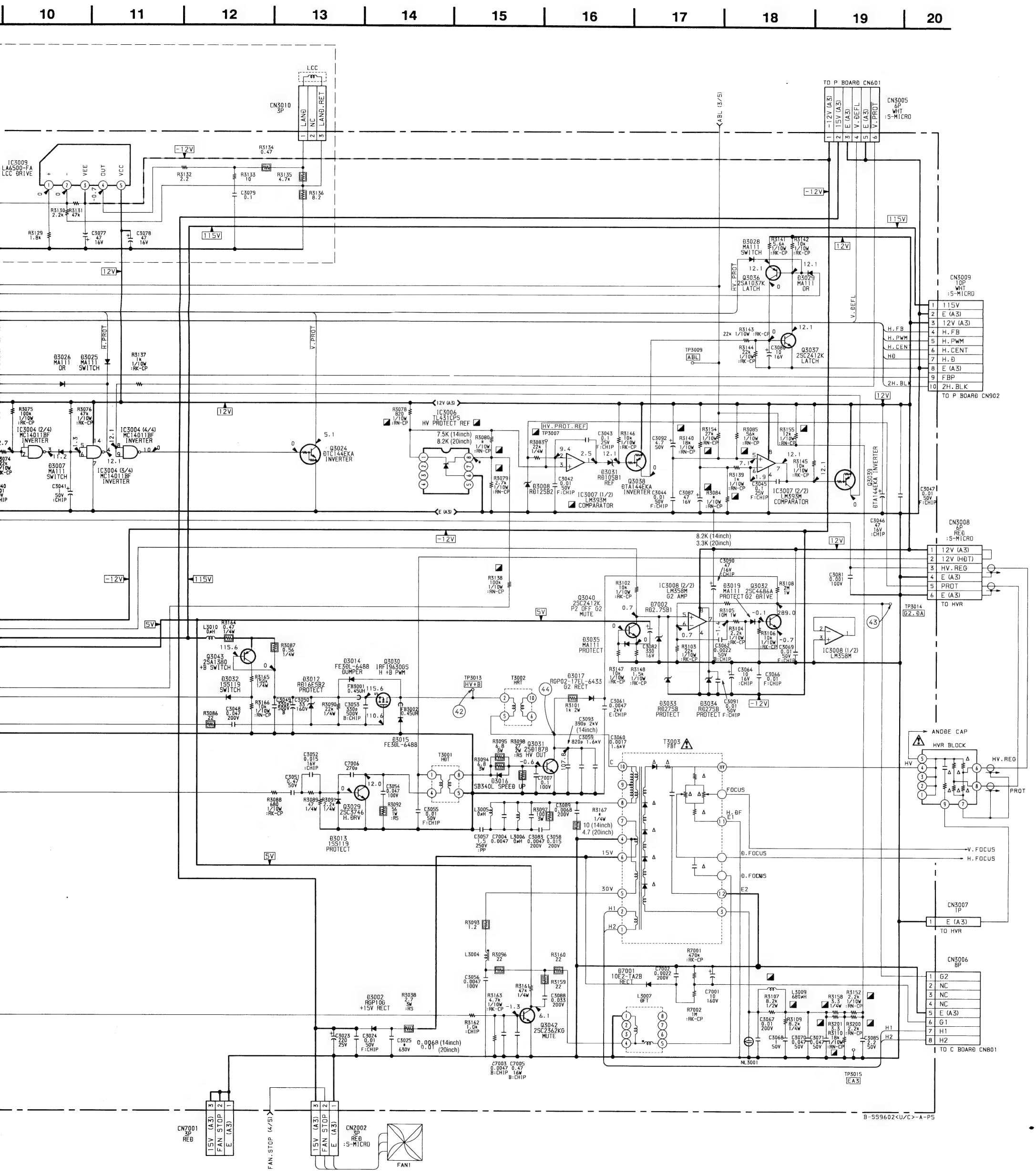
V.BLKB.DA (3/5)

B-SS9602<U/C>-A-P4.

- Refer to page 11-8, 9 for Printed Wiring Board
- Refer to page 10-4 for Waveforms
- Refer to page 10-9, 10 for IC Block Diagrams

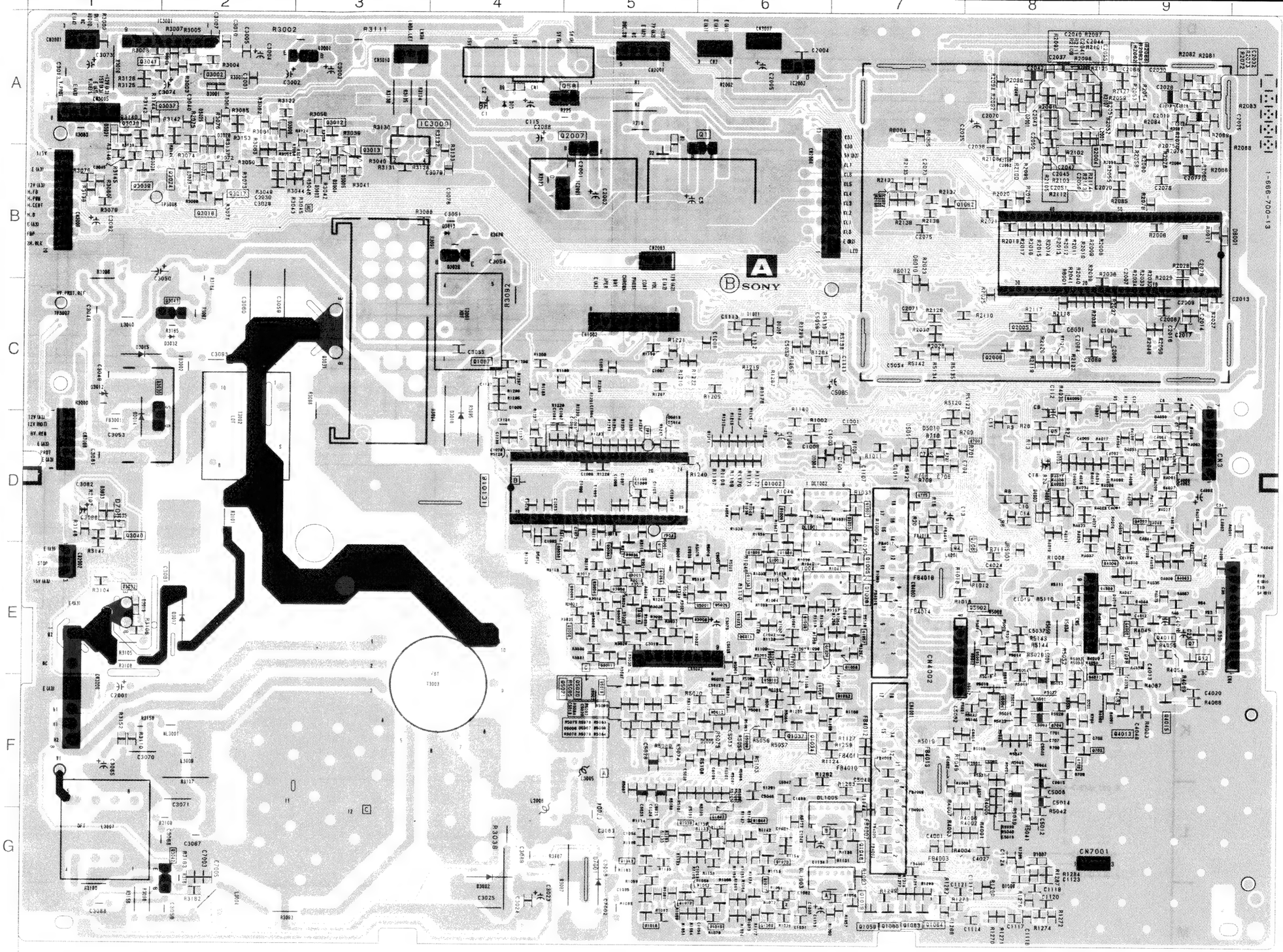


10 11 12 13 14 15 16 17 18 19 20



-13

*A-1	Q1	*B-6	Q3037	*A-1
*B-5	Q2	*D-7	Q3038	*A-1
*D-9	Q3	D-3	Q3039	*B-1
*A-4	Q5	*D-8	Q3040	*D-1
*A-4	Q7	*E-9	Q3041	*A-2
D-3	Q12	*E-9	Q3042	*G-2
*F-8	Q58	*A-5	Q3043	*C-2
*D-6	Q700	*D-7	Q4002	*D-9
*D-7	Q701	D-3	Q4003	*E-9
*G-8	Q702	*F-8	Q4004	*E-9
*G-8	Q704	*F-8	Q4005	*D-8
*D-4	Q705	*D-7	Q4006	*E-9
*C-6	Q1001	*E-6	Q4007	*E-9
*C-6	Q1002	*D-6	Q4008	*E-9
*A-8	Q1003	*D-7	Q4011	*E-9
C-2	Q1005	*E-7	Q4012	*E-9
*A-2	Q1006	*D-6	Q4013	*F-9
*G-4	Q1007	*D-7	Q4015	*F-9
*B-3	Q1008	*E-6	Q5001	*E-6
*B-3	Q1009	*D-6	Q5002	*E-8
*B-3	Q1012	*G-5	Q5003	*E-8
*A-2	Q1015	*G-6	Q5004	*F-8
*C-1	Q1016	*G-6	Q5009	*F-6
*B-4	Q1017	*G-6	Q5010	*F-6
*D-1	Q1019	*G-7	Q5011	*E-6
*C-1	Q1023	*E-6	Q5012	*F-6
*D-4	Q1026	*E-6	Q5019	*F-5
*E-2	Q1027	*E-6	Q5020	*F-5
*E-1	Q1028	*E-7	Q5021	*F-5
*B-2	Q1029	*E-6	Q5025	*E-6
*B-2	Q1032	*F-7		
*B-2	Q1034	*F-6	*:B SIDE MOUNT	
*B-2	Q1036	*E-6		
*B-1	Q1037	*F-6		
*A-1	Q1039	*G-5		
*C-2	Q1042	*G-6		
*D-1	Q1043	*G-5		
*D-1	Q1044	*G-6		
*D-8	Q1046	*G-7		
*D-8	Q1053	*E-5		
*D-8	Q1054	*E-5		
*D-8	Q1057	*E-7		
*D-9	Q1058	*E-7		
*D-9	Q1059	*G-7		
*D-9	Q1060	*G-7		
*D-9	Q1061	*F-6		
*E-9	Q1062	*B-7		
*E-9	Q1063	*G-7		
D-2	Q1064	*G-7		
*E-9	Q1067	*C-4		
*D-9	Q1069	*G-6		
C-2	Q1070	*G-6		
C-2	Q2004	*B-9		
*D-9	Q2005	*C-8		
*D-9	Q2006	*C-8		
*D-9	Q2007	*B-5		
*E-5	Q3001	*A-3		
*F-6	Q3002	*A-2		
*F-5	Q3003	*E-5		
*F-5	Q3004	*E-5		
*F-5	Q3005	*E-5		
*D-7	Q3006	*E-5		
*D-7	Q3007	*E-5		
*D-5	Q3008	*E-5		
*D-5	Q3009	*E-5		
*D-4	Q3010	*E-5		
D-4	Q3011	*E-5		
E-4	Q3012	*A-3		
*B-9	Q3013	*B-3		
*C-7	Q3016	*B-2		
*G-5	Q3017	*B-2		
*D-1	Q3024	*B-2		
	Q3029	*B-4		
D-6	Q3030	*D-2		
*B-5	Q3031	*C-3		
*A-6	Q3032	*E-1		
B-2	Q3033	*E-5		
*A-2	Q3034	*E-5		
*B-3	Q3035	*D-5		



A –B SIDE–

SUFFIX ; -13

NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

11-8

A
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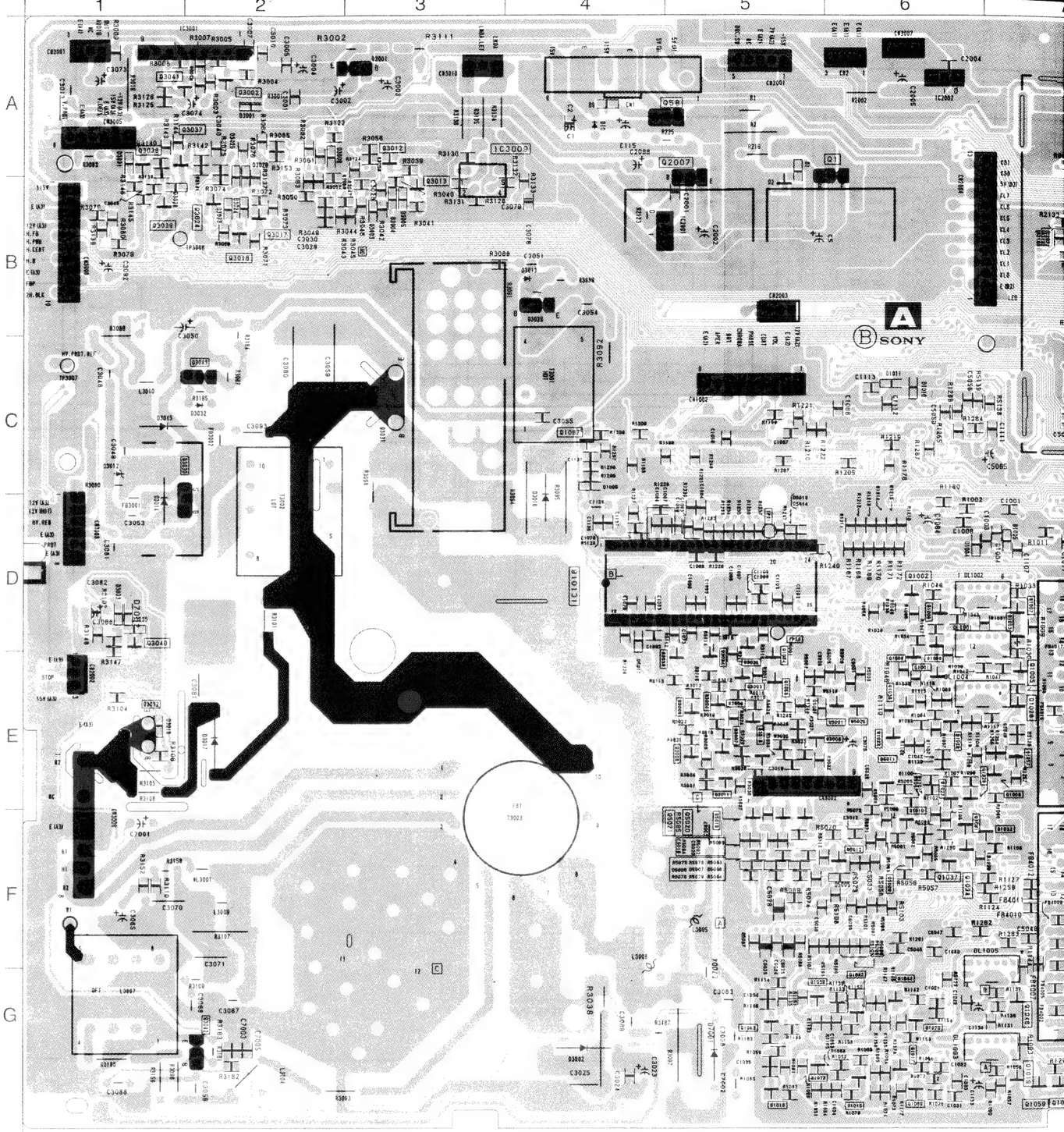
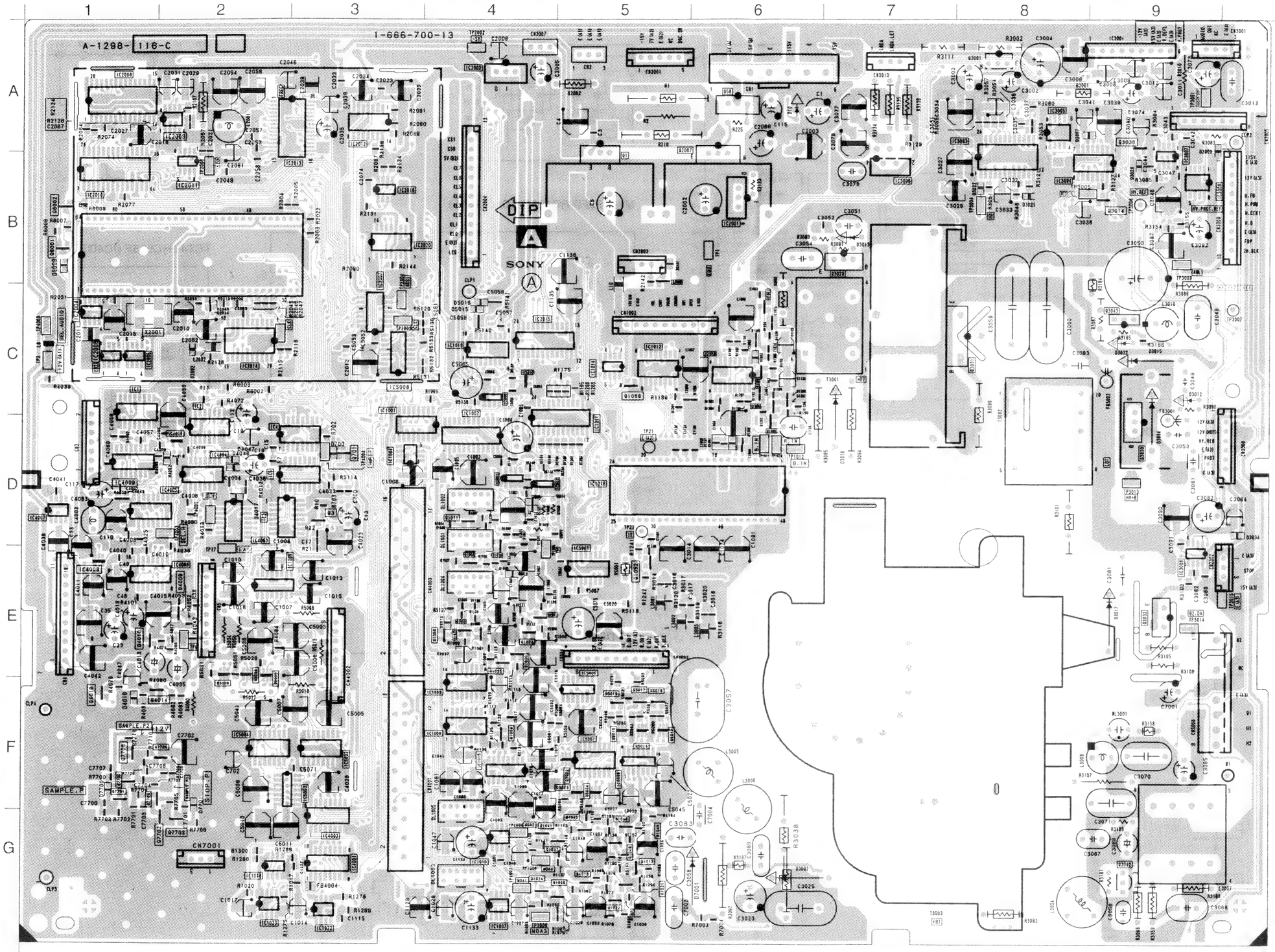
1-666-700-13

D1	*A-1	Q1	*B-6	Q3037	*A-1
D2	*B-5	Q2	*D-7	Q3038	*A-1
D3	*D-9	Q3	D-3	Q3039	*B-1
D9	*A-4	Q5	*D-8	Q3040	*D-1
D10	*A-4	Q7	*E-9	Q3041	*A-2
D700	D-3	Q12	*E-9	Q3042	*G-2
D701	*F-8	Q58	*A-5	Q3043	*C-2
D1004	*D-6	Q700	*D-7	Q4002	*D-9
D1005	*D-7	Q701	D-3	Q4003	*E-9
D1007	*G-8	Q702	*F-8	Q4004	*E-9
D1008	*G-8	Q704	*F-8	Q4005	*D-8
D1009	*D-4	Q705	*D-7	Q4006	*E-9
D1010	*C-6	Q1001	*E-6	Q4007	*E-9
D1011	*C-6	Q1002	*D-6	Q4008	*E-9
D2001	*A-8	Q1003	*D-7	Q4011	*E-9
D2002	C-2	Q1005	*E-7	Q4012	*E-9
D3001	*A-2	Q1006	*D-6	Q4013	*F-9
D3002	*G-4	Q1007	*D-7	Q4015	*F-9
D3003	*B-3	Q1008	*E-6	Q5001	*E-6
D3004	*B-3	Q1009	*D-6	Q5002	*E-8
D3005	*B-3	Q1012	*G-5	Q5003	*E-8
D3006	*A-2	Q1015	*G-6	Q5004	*F-8
D3012	*C-1	Q1016	*G-6	Q5009	*F-6
D3013	*B-4	Q1017	*G-6	Q5010	*F-6
D3014	*D-1	Q1019	*G-7	Q5011	*E-6
D3015	*C-1	Q1023	*E-6	Q5012	*F-6
D3016	*D-4	Q1026	*E-6	Q5019	*F-5
D3017	*E-2	Q1027	*E-6	Q5020	*F-5
D3019	*E-1	Q1028	*E-7	Q5021	*F-5
D3023	*B-2	Q1029	*E-6	Q5025	*E-6
D3024	*B-2	Q1032	*F-7		
D3025	*B-2	Q1034	*F-6	*:B SIDE MOUNT	
D3026	*B-2	Q1036	*E-6		
D3028	*B-1	Q1037	*F-6		
D3031	*A-1	Q1039	*G-5		
D3032	*C-2	Q1042	*G-6		
D3033	*D-1	Q1043	*G-5		
D3035	*D-1	Q1044	*G-6		
D4001	*D-8	Q1046	*G-7		
D4002	*D-8	Q1053	*E-5		
D4003	*D-8	Q1054	*E-5		
D4004	*D-8	Q1057	*E-7		
D4005	*D-9	Q1058	*E-7		
D4006	*D-9	Q1059	*G-7		
D4007	*D-9	Q1060	*G-7		
D4008	*D-9	Q1061	*F-6		
D4009	*E-9	Q1062	*B-7		
D4010	*E-9	Q1063	*G-7		
D4017	D-2	Q1064	*G-7		
D4018	*E-9	Q1067	*C-4		
D4046	*D-9	Q1069	*G-6		
D4047	C-2	Q1070	*G-6		
D4048	C-2	Q2004	*B-9		
D4049	*D-9	Q2005	*C-8		
D4050	*D-9	Q2006	*C-8		
D4051	*D-9	Q2007	*B-5		
D5001	*E-5	Q3001	*A-3		
D5005	*F-6	Q3002	*A-2		
D5006	*F-5	Q3003	*E-5		
D5007	*F-5	Q3004	*E-5		
D5008	*F-5	Q3005	*E-5		
D5010	*D-7	Q3006	*E-5		
D5011	*D-7	Q3007	*E-5		
D5013	*D-5	Q3008	*E-5		
D5014	*D-5	Q3009	*E-5		
D5017	*D-4	Q3010	*E-5		
D5018	D-4	Q3011	*E-5		
D5019	E-4	Q3012	*A-3		
D6001	*B-9	Q3013	*B-3		
D6010	*C-7	Q3016	*B-2		
D7001	*G-5	Q3017	*B-2		
D7002	*D-1	Q3024	*B-2		
		Q3029	*B-4		
IC1016	D-6	Q3030	*D-2		
IC2001	*B-5	Q3031	*C-3		
IC2002	*A-6	Q3032	*E-1		
IC2003	B-2	Q3033	*E-5		
IC3001	*A-2	Q3034	*E-5		
IC3009	*B-3	Q3035	*D-5		



NOTE:
The cir
600 Vp
inspecti

11-8



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A
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1-666-700-13

D1001	D-6	Q1011	D-4
D1002	C-6	Q1013	G-5
D3007	A-8	Q1014	G-4
D3008	A-9	Q1018	G-5
D3021	B-8	Q1020	G-5
D3022	B-8	Q1021	G-5
D3029	B-9	Q1022	G-5
D3034	D-10	Q1024	E-5
D4019	F-1	Q1025	E-4
D4052	D-2	Q1030	E-5
D5009	B-1	Q1031	E-4
D5012	E-4	Q1033	E-4
D5015	D-4	Q1035	E-4
D5016	D-4	Q1038	F-4
		Q1040	G-5
IC1	D-1	Q1041	G-4
IC2	D-2	Q1045	G-5
IC3	D-2	Q1047	G-5
IC4	D-3	Q1048	G-5
IC5	D-3	Q1049	G-5
IC1001	D-3	Q1050	C-6
IC1002	D-4	Q1051	C-6
IC1004	D-3	Q1052	E-5
IC1005	E-2	Q1056	E-4
IC1007	G-4	Q1065	C-6
IC1008	F-4	Q1066	D-6
IC1009	F-4	Q1068	C-5
IC1010	G-4	Q2008	B-5
IC1011	D-4	Q3014	B-9
IC1012	C-5	Q3036	A-9
IC1013	C-6	Q4009	E-2
IC1014	C-5	Q4010	E-1
IC1015	F-4	Q4014	F-2
IC1018	G-2	Q4016	F-1
IC1019	C-4	Q5005	E-2
IC1022	G-3	Q5006	E-2
IC1023	G-23	Q5008	E-2
IC2004	C-1	Q5013	F-5
IC2005	C-1	Q5014	F-5
IC2006	C-1	Q5015	F-5
IC2007	C-3	Q5016	F-5
IC2008	A-1	Q5017	F-5
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IC2010	B-1	Q5022	F-5
IC2011	B-2	Q5023	F-5
IC2012	A-3	Q5024	F-5
IC2013	A-3	Q6001	B-1
IC2014	C-2	Q6002	B-1
IC2015	C-4		
IC2016	B-3	TP1	B-6
IC2020	B-3	TP2	C-1
IC3003	B-8	TP6	E-2
IC3004	B-9	TP17	E-2
IC3005	A-8	TP21	*D-5
IC3006	B-9	TP22	*D-5
IC3007	B-9	TP1005	E-4
IC3008	E-9	TP1007	G-4
IC4001	G-3	TP1009	G-4
IC4002	G-3	TP1010	D-6
IC4003	E-2	TP1011	D-6
IC4004	D-2	TP1012	D-6
IC4005	D-2	TP2002	A-4
IC4006	E-1	TP2003	C-3
IC4007	D-1	TP2004	B-3
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IC5001	E-5	TP3005	B-8
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IC5007	F-5	TP3014	E-9
IC5008	C-3	TP3015	E-10
IC5009	C-4	TP4001	D-2
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IC5011	D-4	TP4003	C-1
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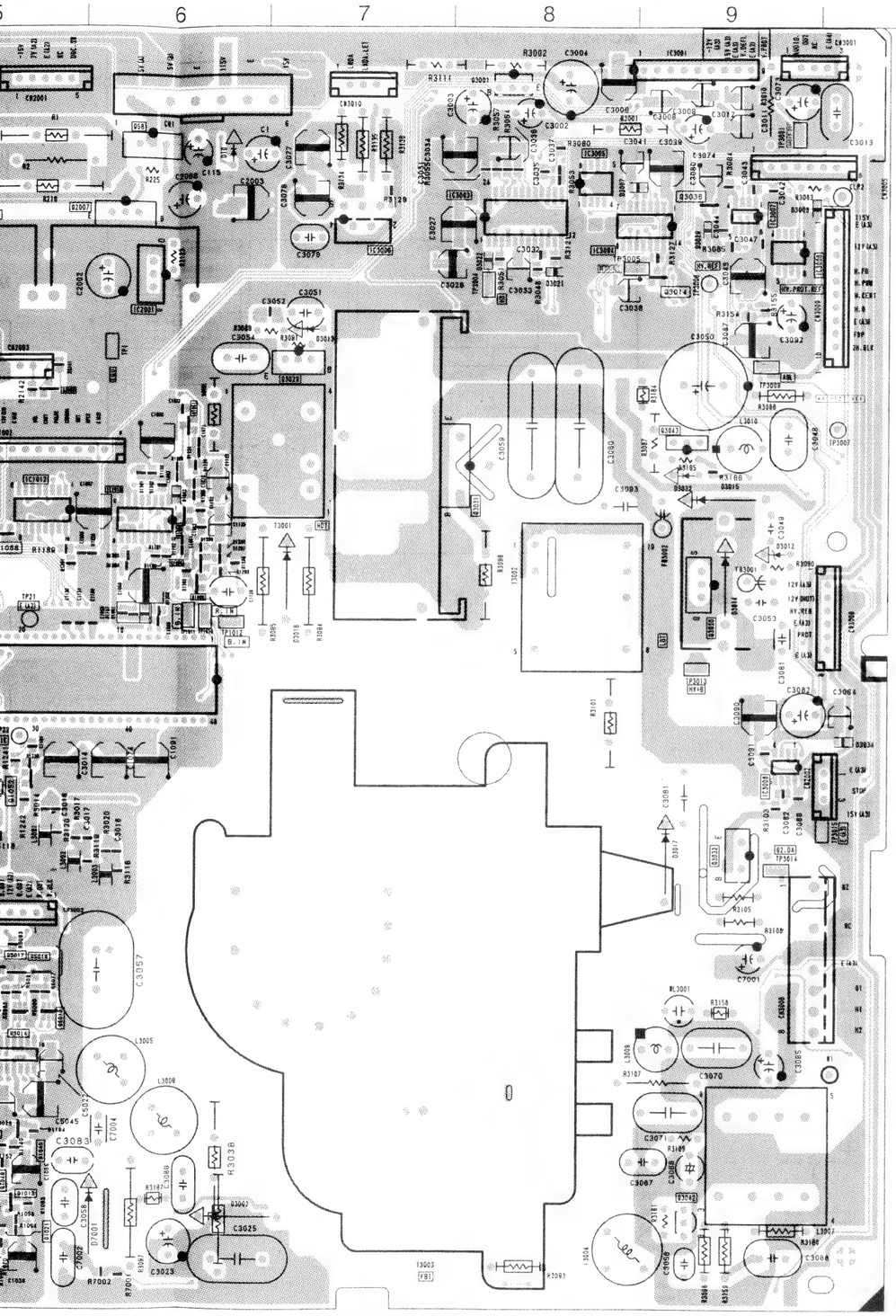
Q1010	D-4		

A –A SIDE–

SUFFIX ; -13



A –A SIDE–

SUFFIX ; -13

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D3007	A-8	Q1014	G-4
D3008	A-9	Q1018	G-5
D3021	B-8	Q1020	G-5
D3022	B-8	Q1021	G-5
D3029	B-9	Q1022	G-5
D3034	D-10	Q1024	E-5
D4019	F-1	Q1025	E-4
D4052	D-2	Q1030	E-5
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D5012	E-4	Q1033	E-4
D5015	D-4	Q1035	E-4
D5016	D-4	Q1038	F-4
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IC1	D-1	Q1041	G-4
IC2	D-2	Q1045	G-5
IC3	D-2	Q1047	G-5
IC4	D-3	Q1048	G-5
IC5	D-3	Q1049	G-5
IC1001	D-3	Q1050	C-6
IC1002	D-4	Q1051	C-6
IC1004	D-3	Q1052	E-5
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IC1008	F-4	Q1066	D-6
IC1009	F-4	Q1068	C-5
IC1010	G-4	Q2008	B-5
IC1011	D-4	Q3014	B-9
IC1012	C-5	Q3036	A-9
IC1013	C-6	Q4009	E-2
IC1014	C-5	Q4010	E-1
IC1015	F-4	Q4014	F-2
IC1018	G-2	Q4016	F-1
IC1019	C-4	Q5005	E-2
IC1022	G-3	Q5006	E-2
IC1023	G-23	Q5008	E-2
IC2004	C-1	Q5013	F-5
IC2005	C-1	Q5014	F-5
IC2006	C-1	Q5015	F-5
IC2007	C-3	Q5016	F-5
IC2008	A-1	Q5017	F-5
IC2009	A-2	Q5018	F-5
IC2010	B-1	Q5022	F-5
IC2011	B-2	Q5023	F-5
IC2012	A-3	Q5024	F-5
IC2013	A-3	Q6001	B-1
IC2014	C-2	Q6002	B-1
IC2015	C-4		
IC2016	B-3	TP1	B-6
IC2020	B-3	TP2	C-1
IC3003	B-8	TP6	E-2
IC3004	B-9	TP17	E-2
IC3005	A-8	TP21	* D-5
IC3006	B-9	TP22	* D-5
IC3007	B-9	TP1005	E-4
IC3008	E-9	TP1007	G-4
IC4001	G-3	TP1009	G-4
IC4002	G-3	TP1010	D-6
IC4003	E-2	TP1011	D-6
IC4004	D-2	TP1012	D-6
IC4005	D-2	TP2002	A-4
IC4006	E-1	TP2003	C-3
IC4007	D-1	TP2004	B-3
IC4008	E-1	TP2006	B-2
IC4009	D-1	TP3001	A-9
IC4010	D-1	TP3004	B-8
IC5001	E-5	TP3005	B-8
IC5002	F-3	TP3006	* B-1
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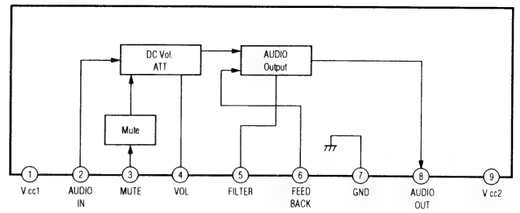
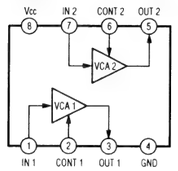
IC5006	F-5	TP3013	D-9
IC5007	F-5	TP3014	E-9
IC5008	C-3	TP3015	E-10
IC5009	C-4	TP4001	D-2
IC5010	C-4	TP4002	E-2
IC5011	D-4	TP4003	C-1
IC5012	D-4	TP4004	D-3
Q1004	E-4	*:B SIDE MOUNT	
Q1010	D-4		

A Board IC Block Diagrams

AN5265 (IC3001)



CXA1211M (IC1004, 1007, 1010)



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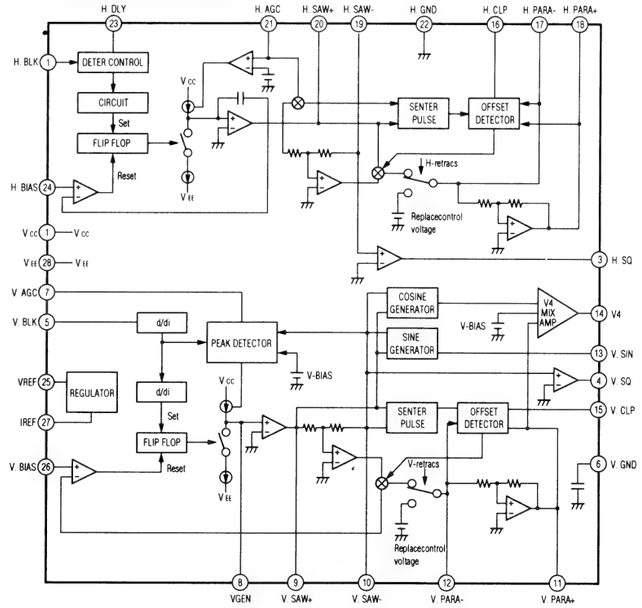

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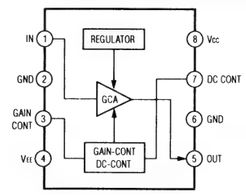

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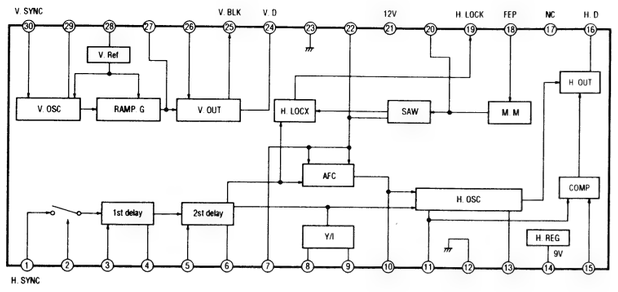

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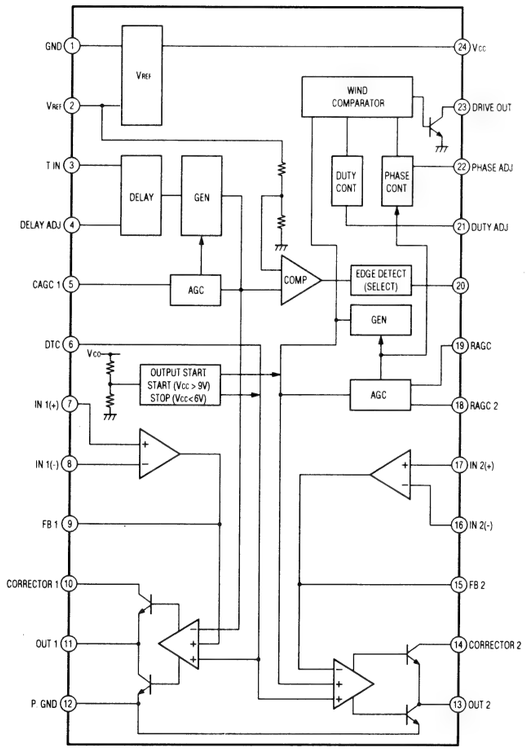

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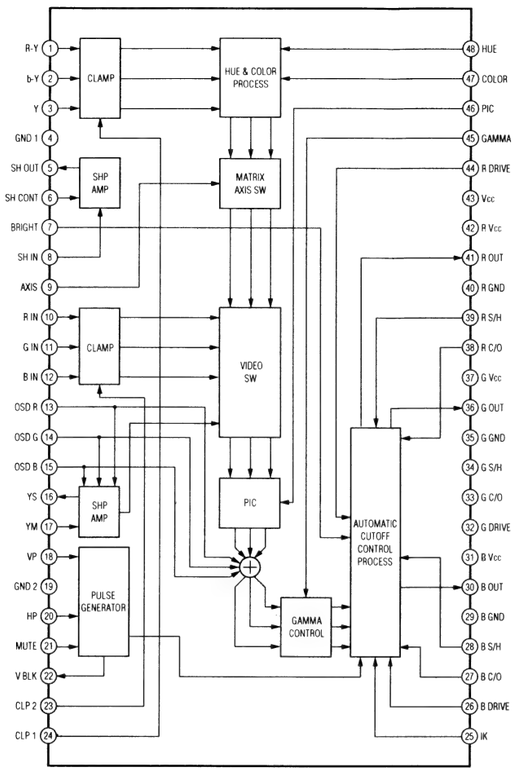

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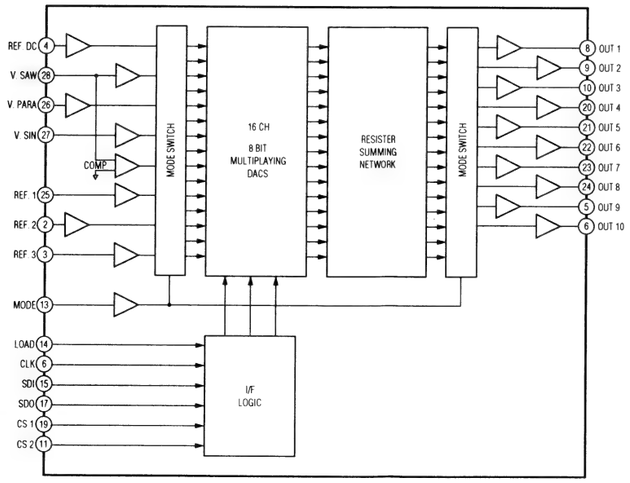
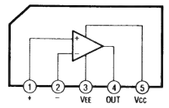


LA6500FA (IC3009)



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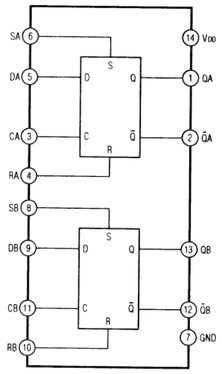
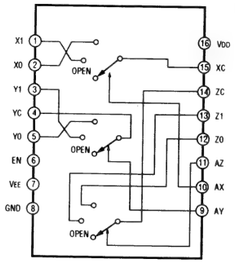


MC14053BF (IC1012, 1013, 5002)



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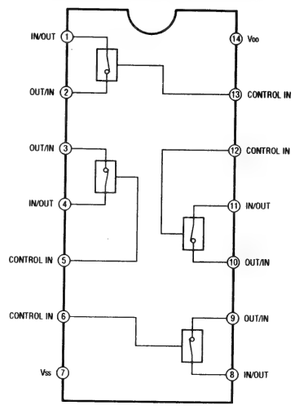

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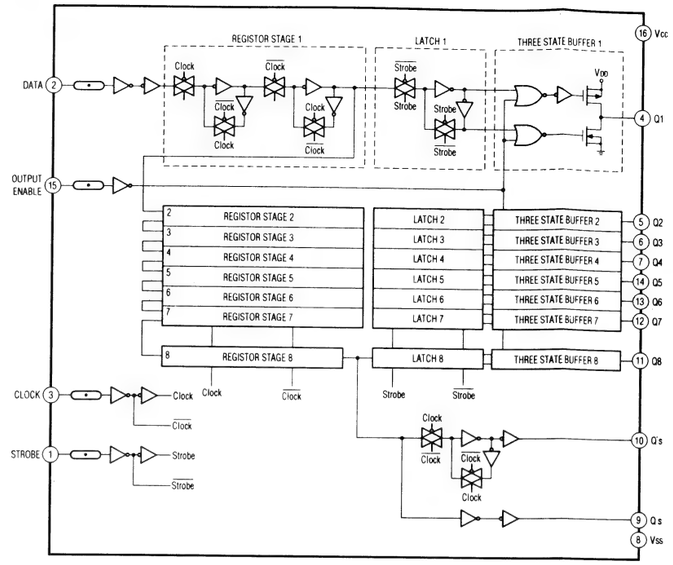
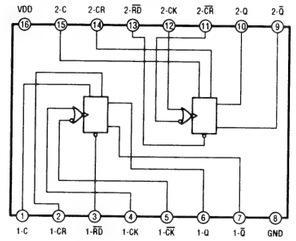


MC14538BFEL (IC1, 3, 4, 4003)



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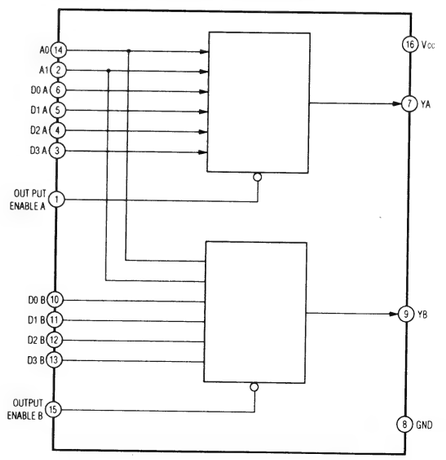

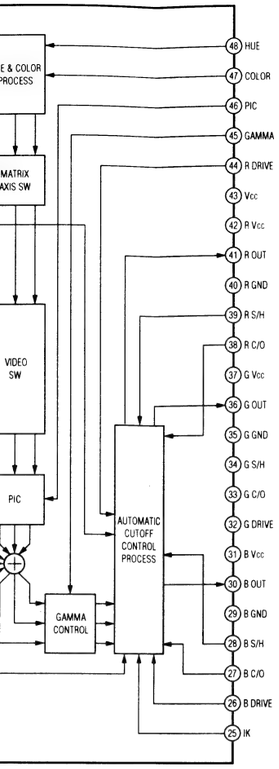

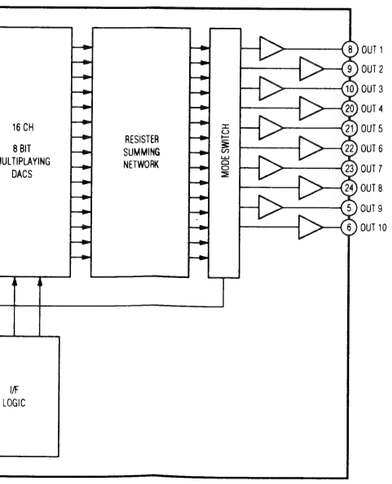

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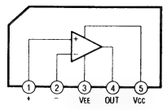

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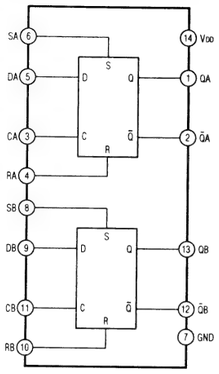

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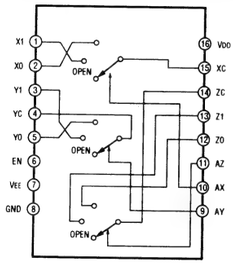

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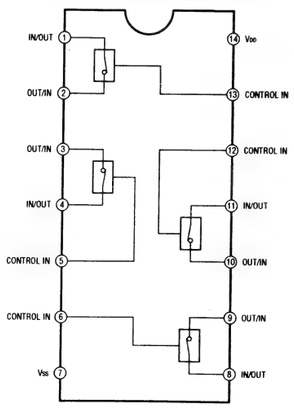

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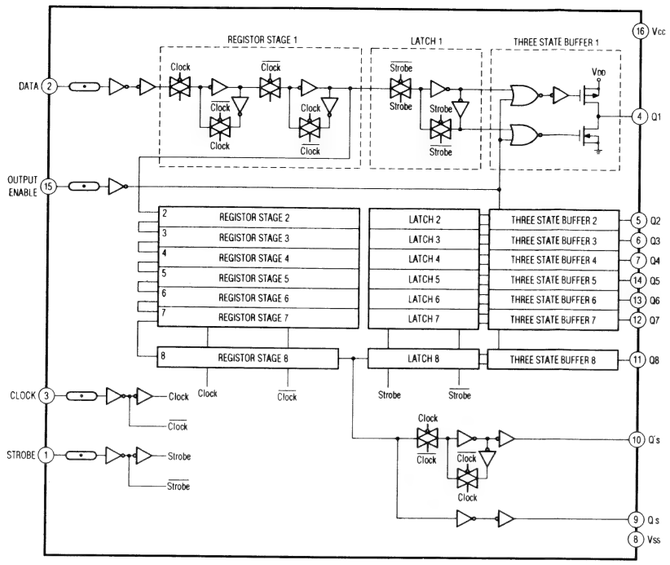
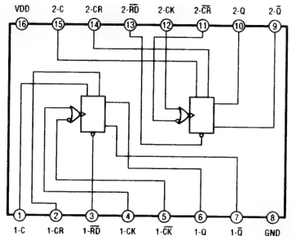


MC14538BFEL (IC1, 3, 4, 4003)



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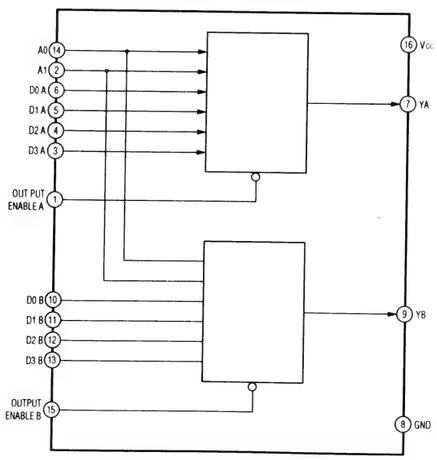

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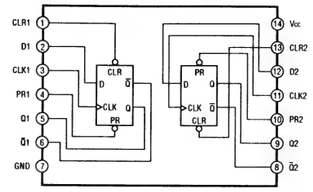

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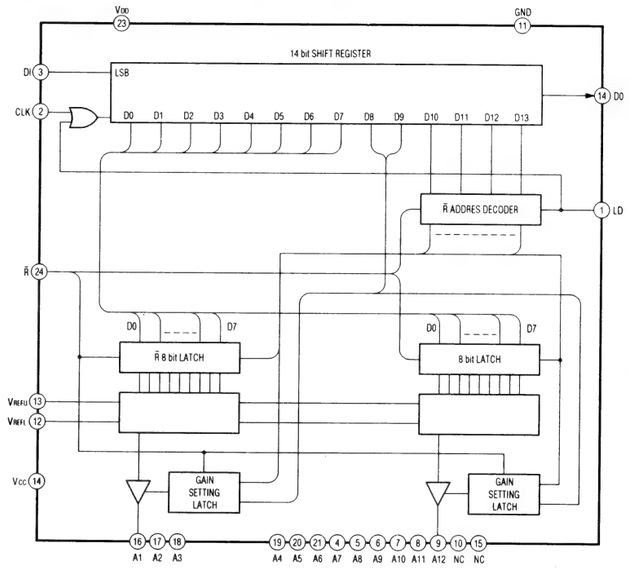

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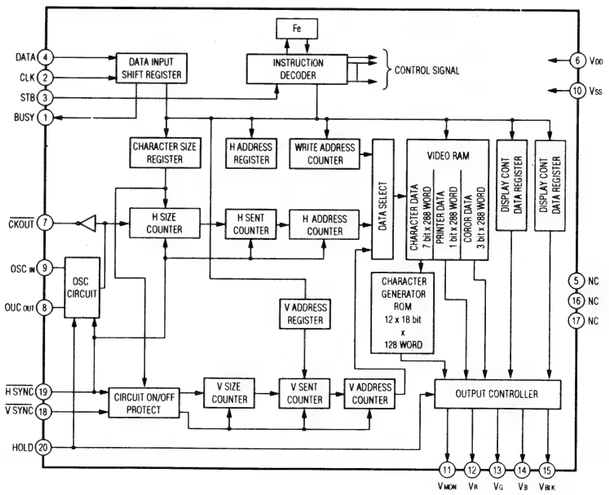

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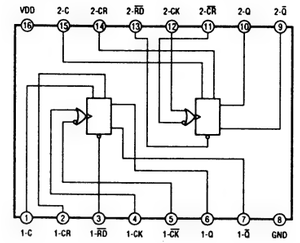

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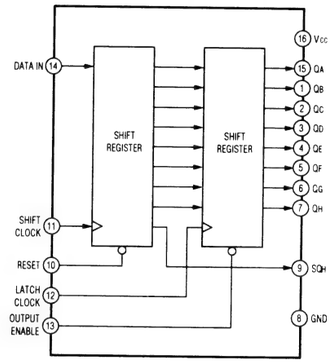

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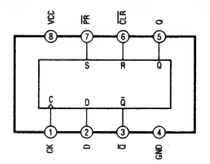

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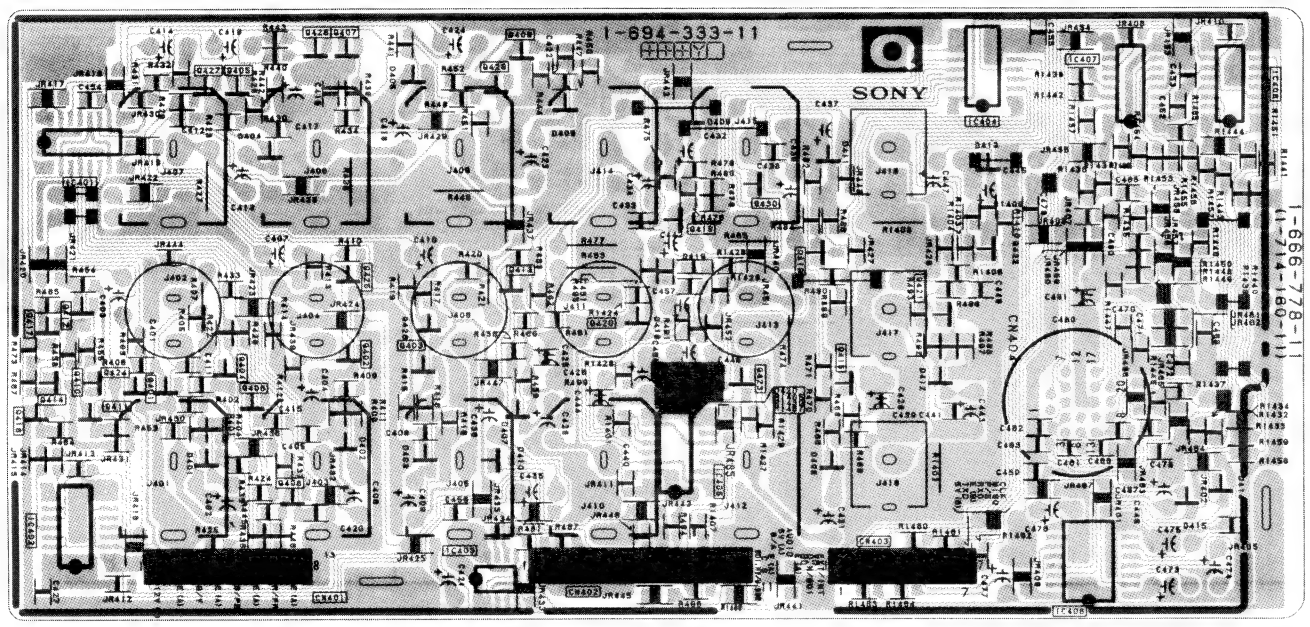
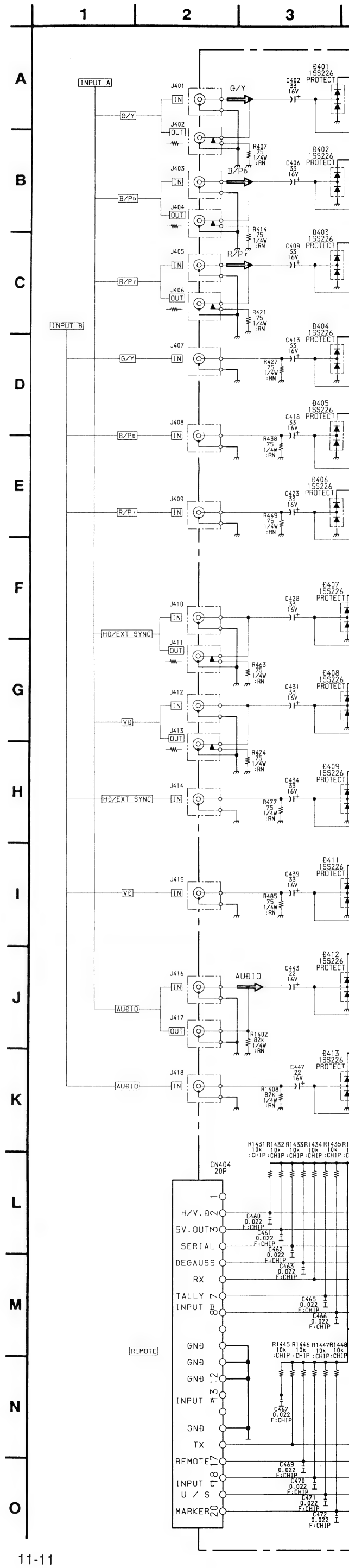


Q –B SIDE–

SUFFIX ; -11



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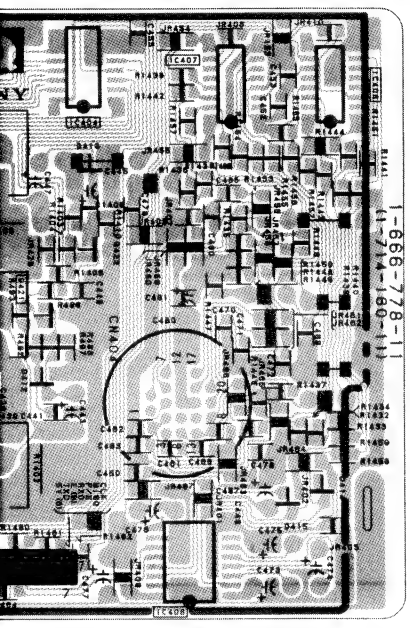
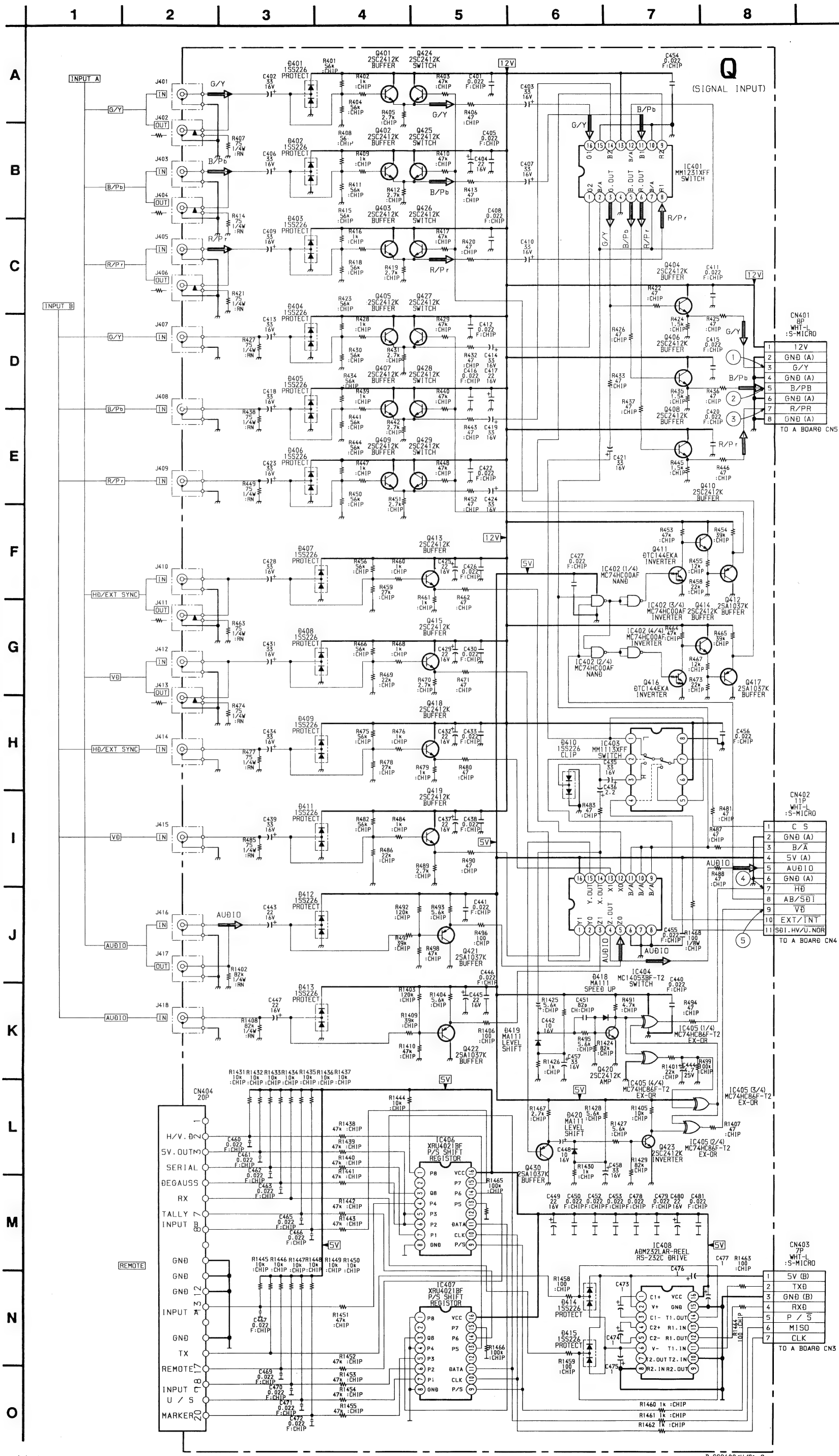
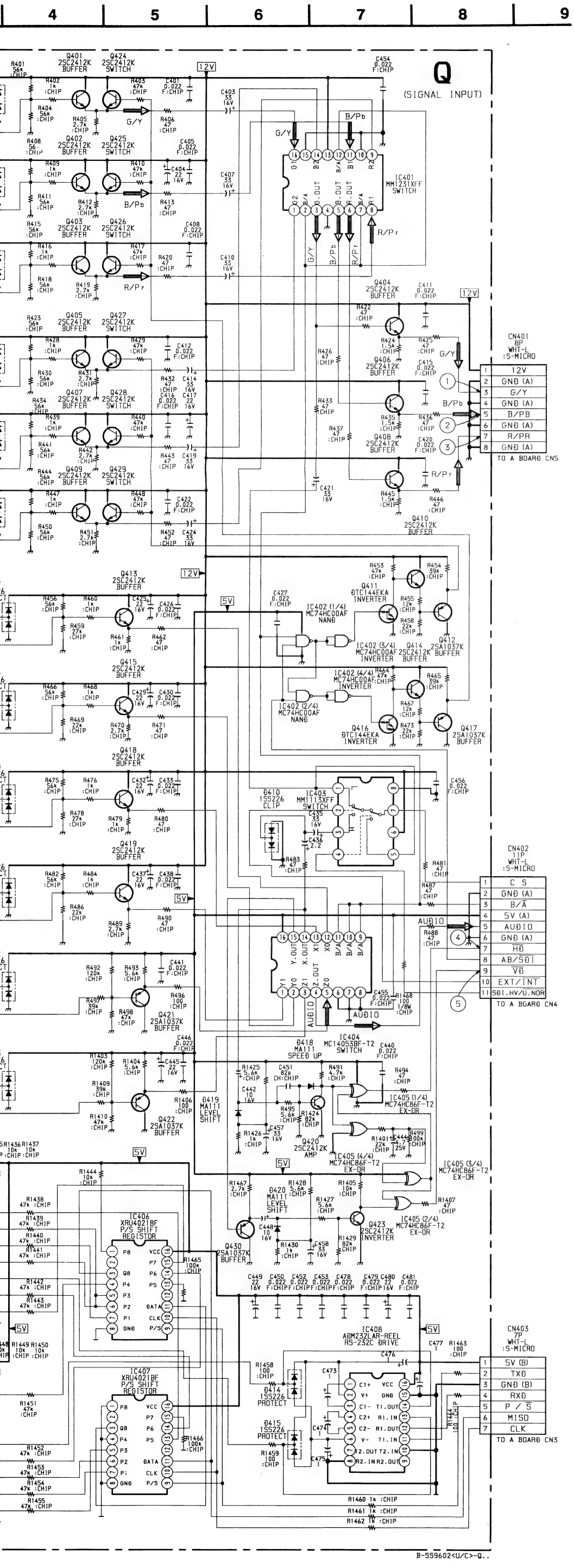


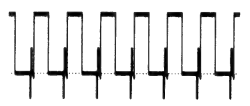
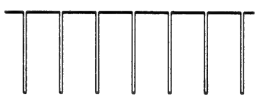
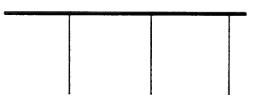
Q –B SIDE–

SUFFIX ; -11





Q Board Waveforms

①  960mVp-p (H)	②  960mVp-p (H)	③  960mVp-p (H)
④  5.4Vp-p (H)	⑤  5.1Vp-p (V)	

Q Board IC Block Diagrams

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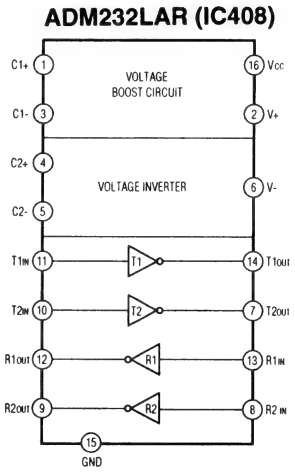
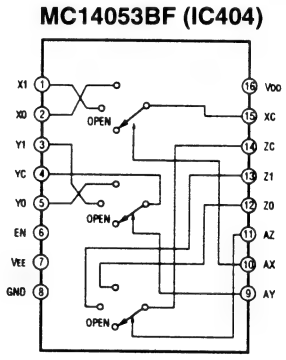
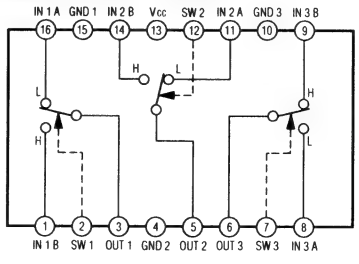


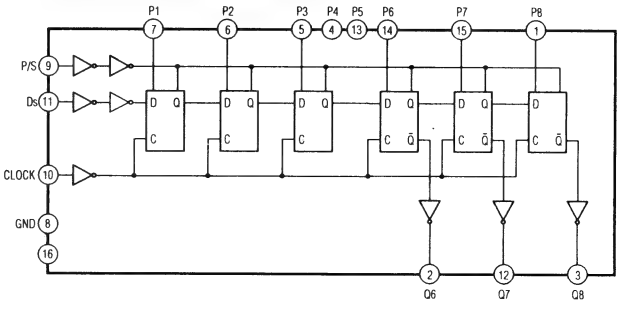
MC14053BF (IC404)

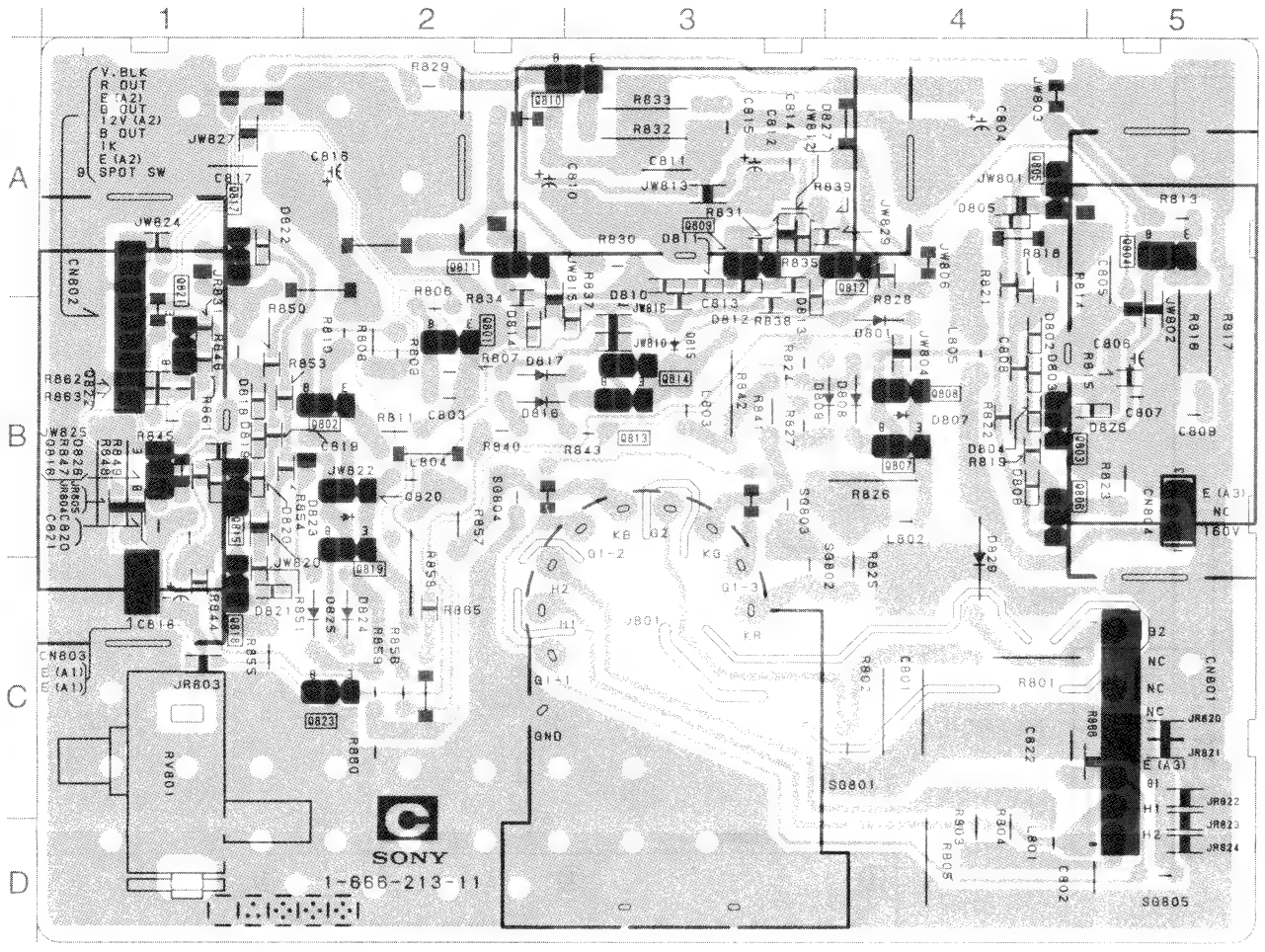


MM1231XFF (IC401)



XRU4021BF (IC406, 407)





C –B SIDE–

SUFFIX ; -11

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C
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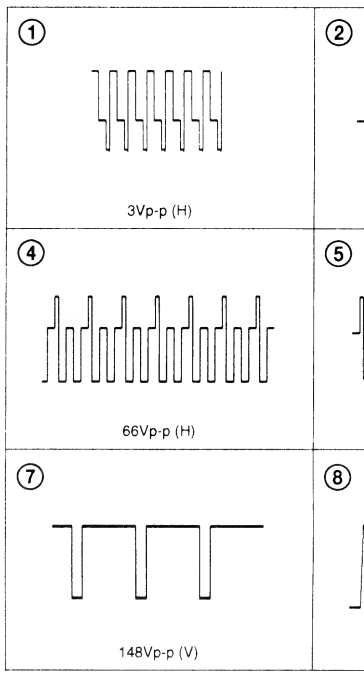
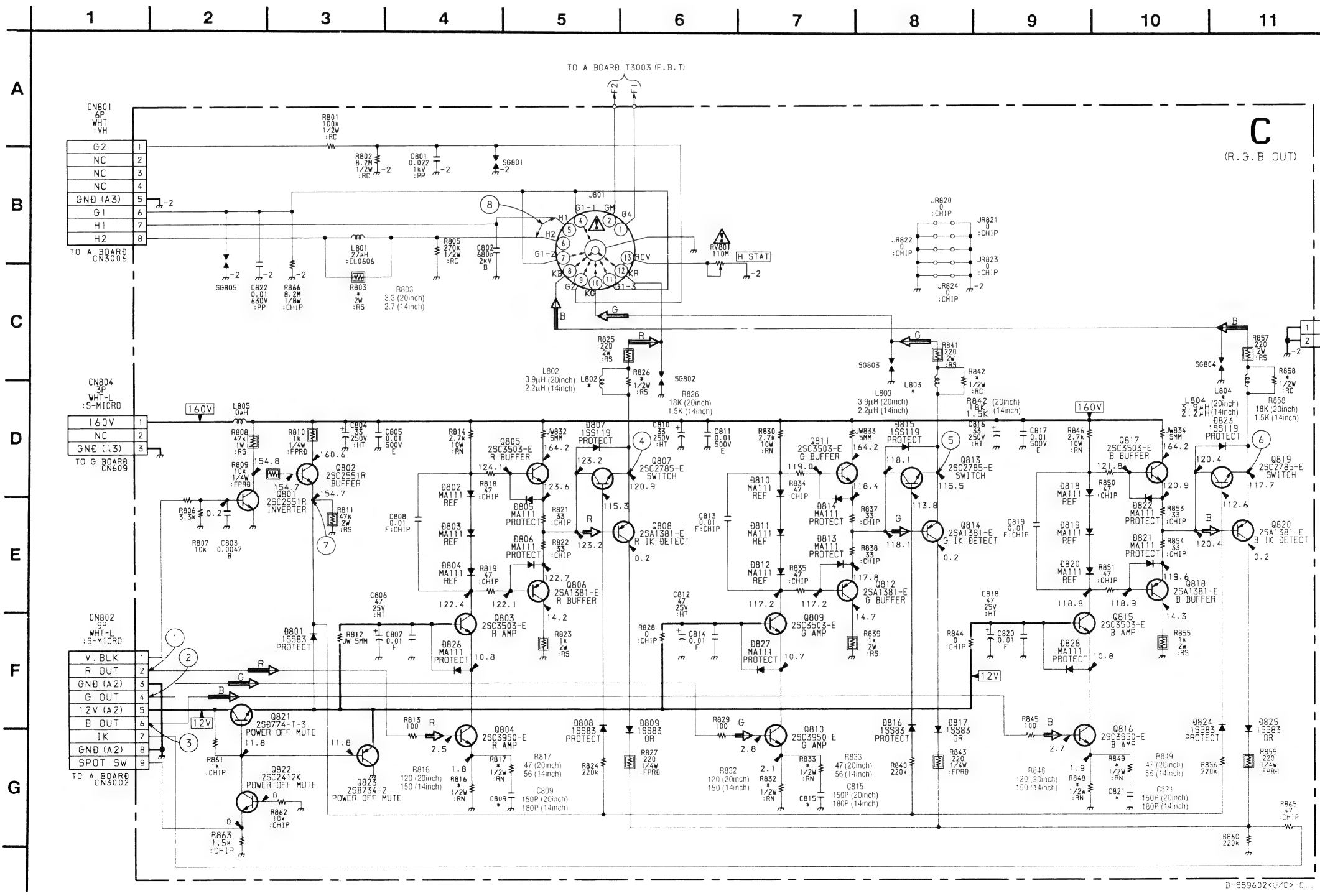
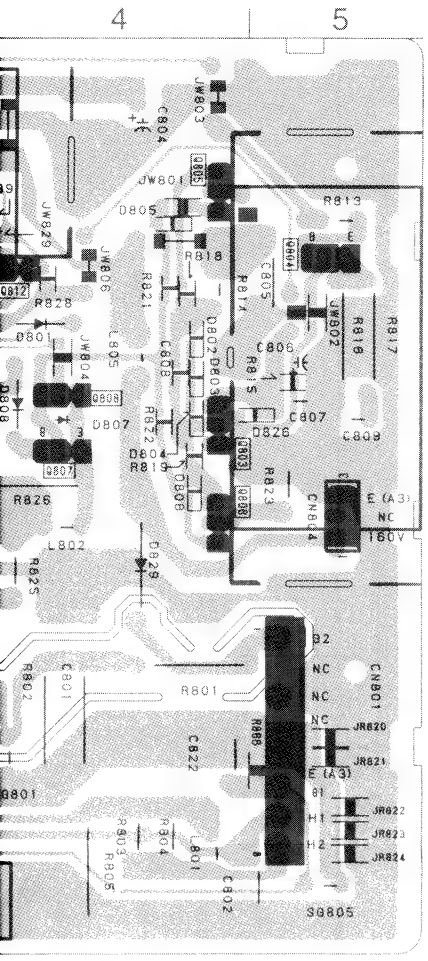
1-666-213-11

D801	B-4
D802	B-5
D803	B-5
D804	B-4
D805	A-4
D806	B-4
D807	B-4
D808	B-4
D809	B-4
D810	B-3
D811	B-3
D812	B-3
D813	B-4
D815	B-3
D816	B-3
D817	B-3
D818	B-1
D819	B-1
D820	B-1
D821	C-1
D822	A-1
D823	B-2
D824	C-2
D825	C-2
D826	B-5
D827	A-4
D828	B-1
Q801	B-2
Q802	B-2
Q803	B-5
Q804	A-5
Q805	A-5
Q806	B-5
Q807	B-4
Q808	B-4
Q809	A-3
Q810	A-3
Q811	A-2
Q812	A-4
Q813	B-3
Q814	B-3
Q815	B-1
Q816	B-1
Q817	A-1
Q818	C-1
Q819	C-2
Q820	B-2
Q821	B-1
Q822	B-1
Q823	C-2
RV801	D-1

C Board Waveforms







C –B SIDE–

SUFFIX ; -11

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C
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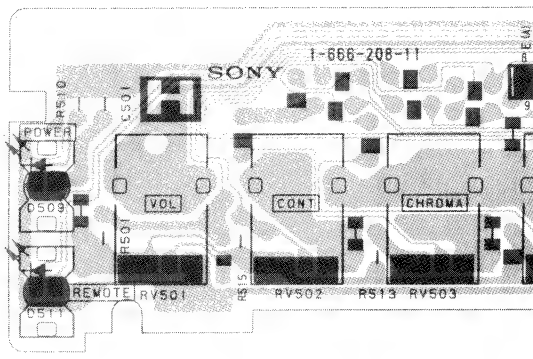
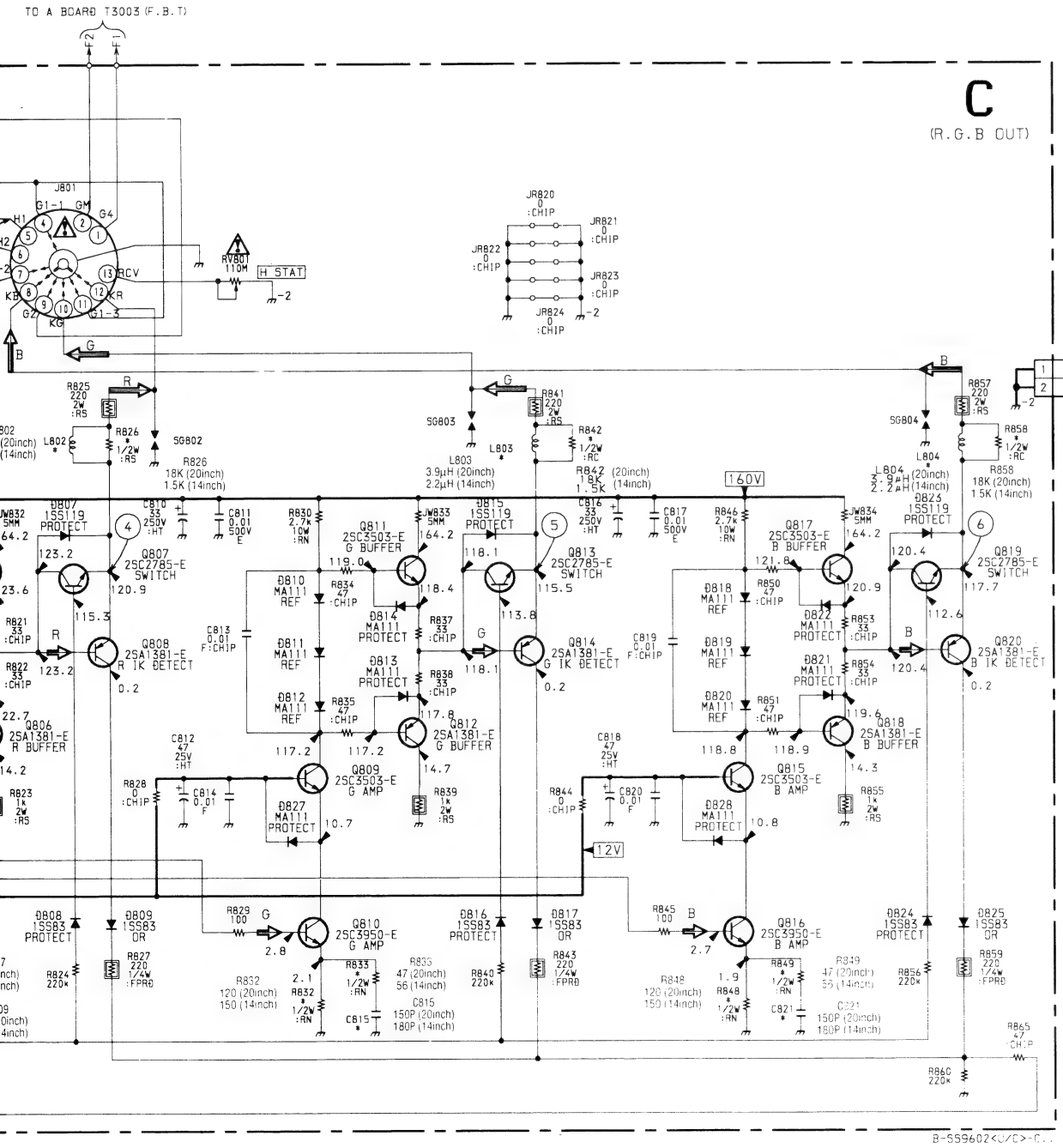
1-666-213-11

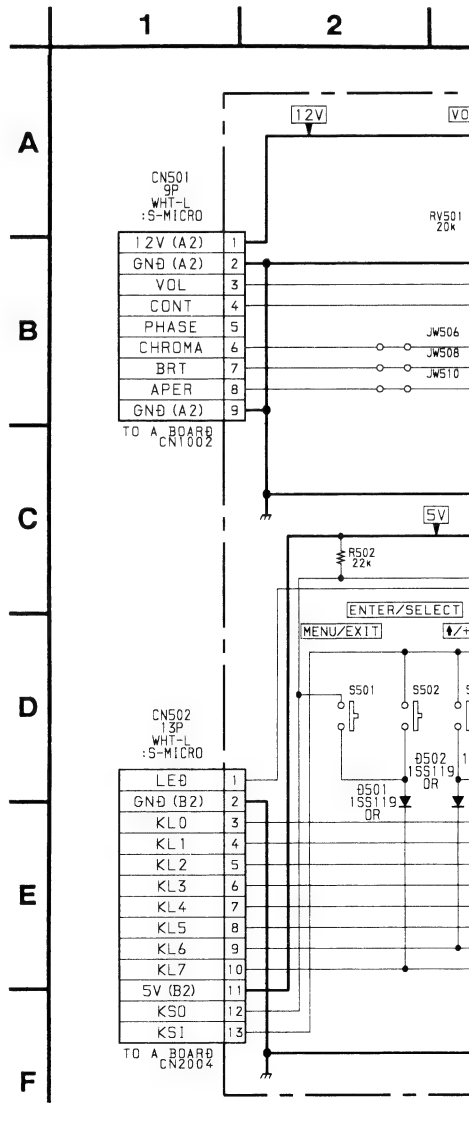
D801	B-4
D802	B-5
D803	B-5
D804	B-4
D805	A-4
D806	B-4
D807	B-4
D808	B-4
D809	B-4
D810	B-3
D811	B-3
D812	B-3
D813	B-4
D815	B-3
D816	B-3
D817	B-3
D818	B-1
D819	B-1
D820	B-1
D821	C-1
D822	A-1
D823	B-2
D824	C-2
D825	C-2
D826	B-5
D827	A-4
D828	B-1
Q801	B-2
Q802	B-2
Q803	B-5
Q804	A-5
Q805	A-5
Q806	B-5
Q807	B-4
Q808	B-4
Q809	A-3
Q810	A-3
Q811	A-2
Q812	A-4
Q813	B-3
Q814	B-3
Q815	B-1
Q816	B-1
Q817	A-1
Q818	C-1
Q819	C-2
Q820	B-2
Q821	B-1
Q822	B-1
Q823	C-2
RV801	D-1

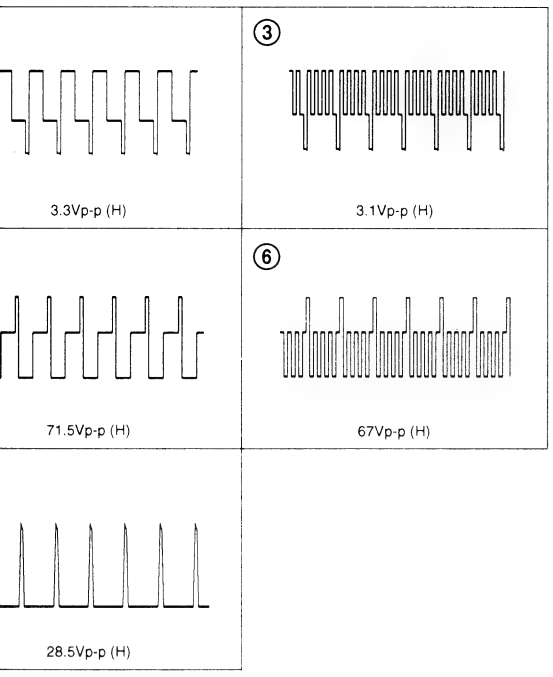
C Board Waveforms

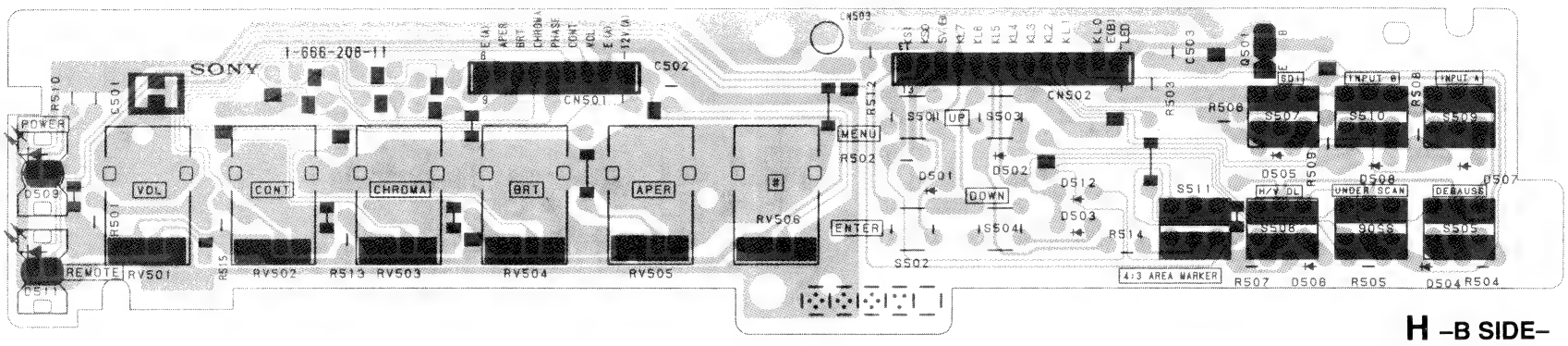
① 3Vp-p (H)	② 3.3Vp-p (H)	③ 3.1Vp-p (H)
④ 66Vp-p (H)	⑤ 71.5Vp-p (H)	⑥ 67Vp-p (H)
⑦ 148Vp-p (V)	⑧ 28.5Vp-p (H)	





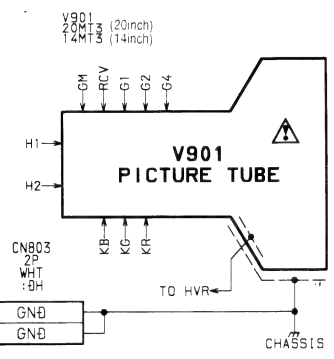


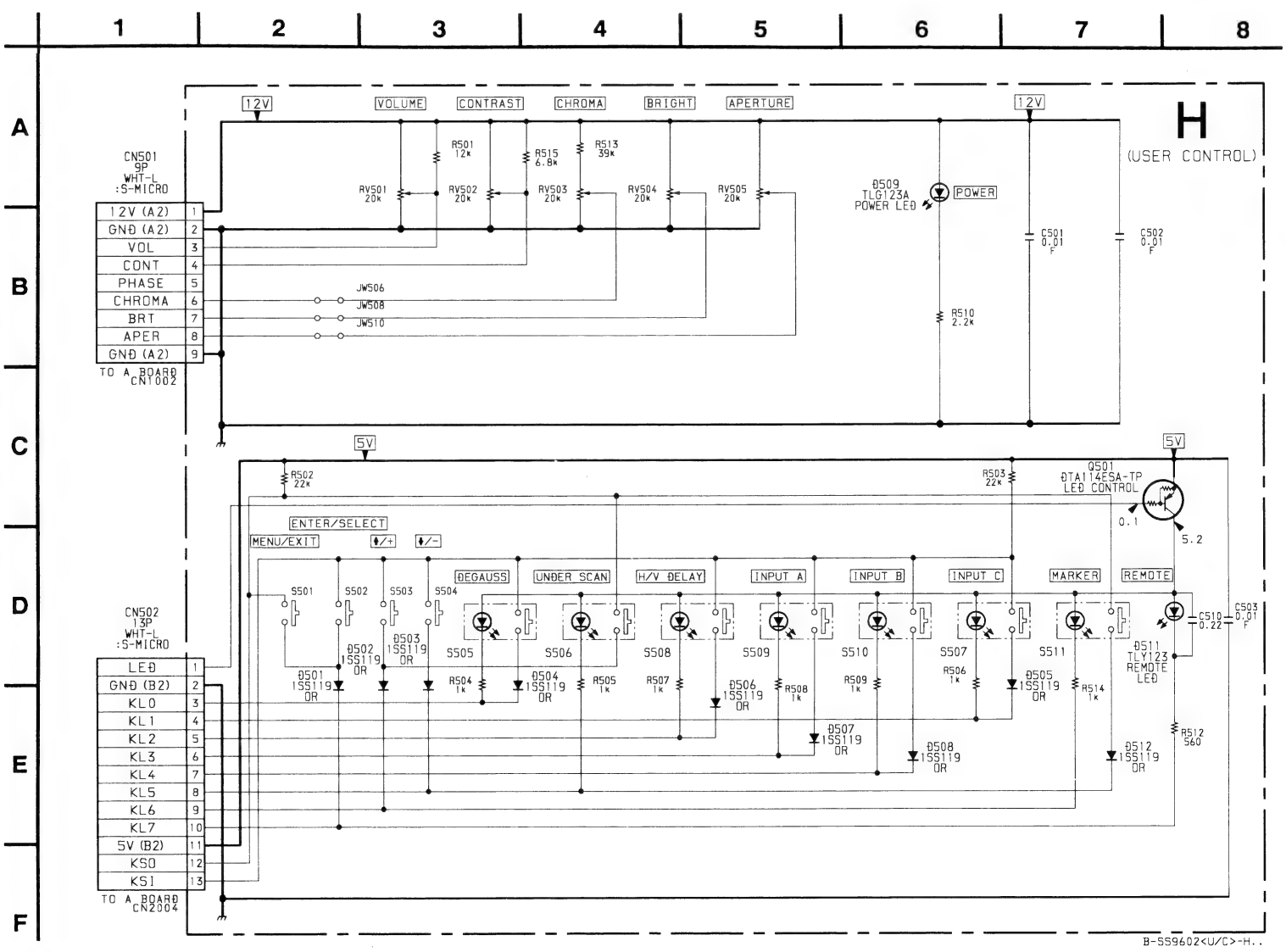


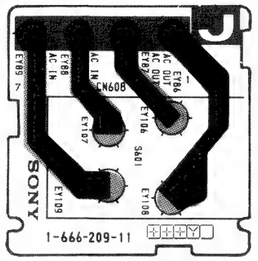


H –B SIDE–

SUFFIX ; -11

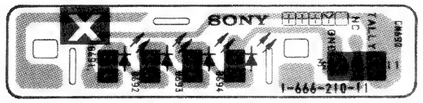






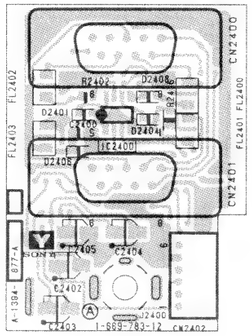
J –B SIDE–

SUFFIX ; -11



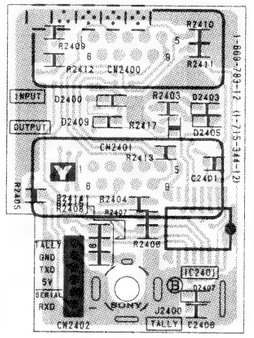
X –B SIDE–

SUFFIX ; -11



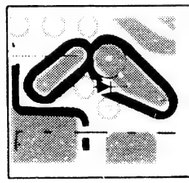
Y –A SIDE–

SUFFIX ; -12

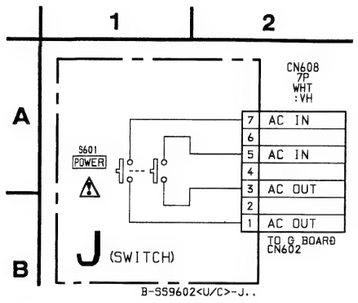


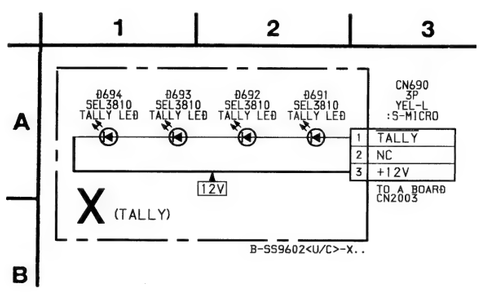
Y –B SIDE–

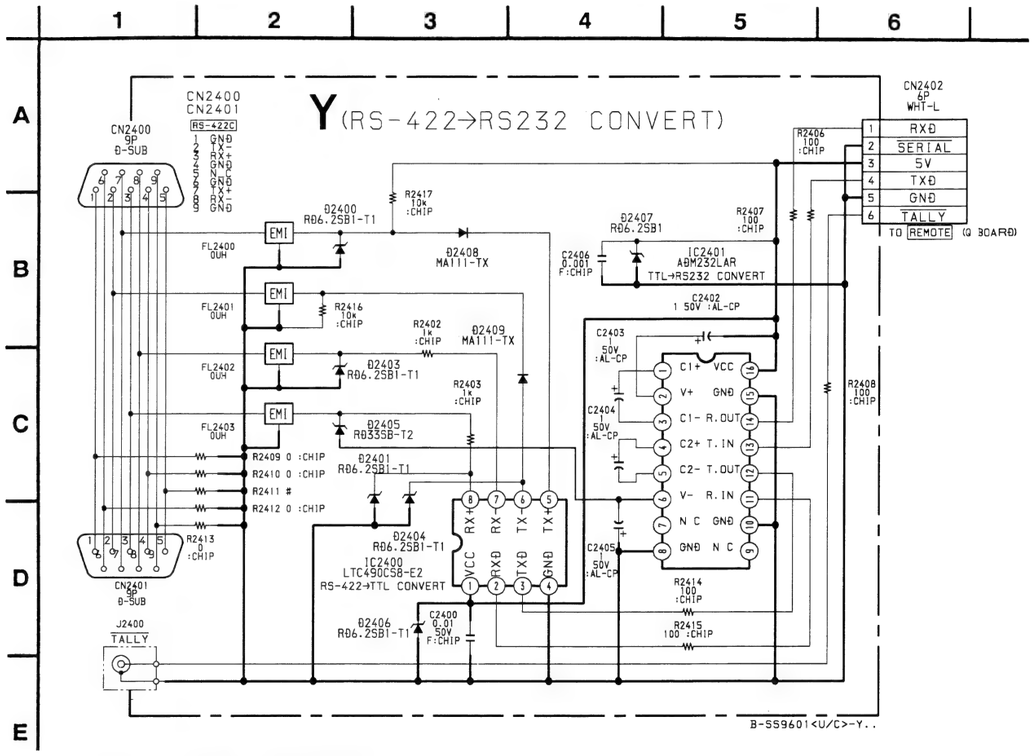
SUFFIX ; -12



NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

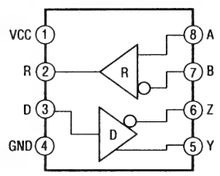




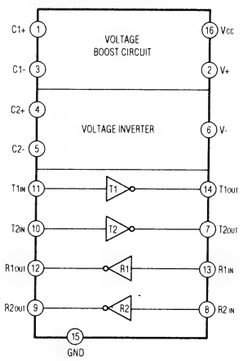


Y Board IC Block Diagrams

LTC490CS8-E2



ADM232LAR



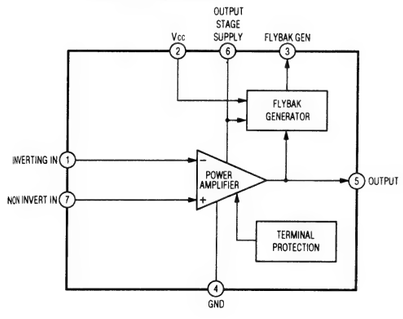
11-13

P Board Waveforms (PHM-20M8U)

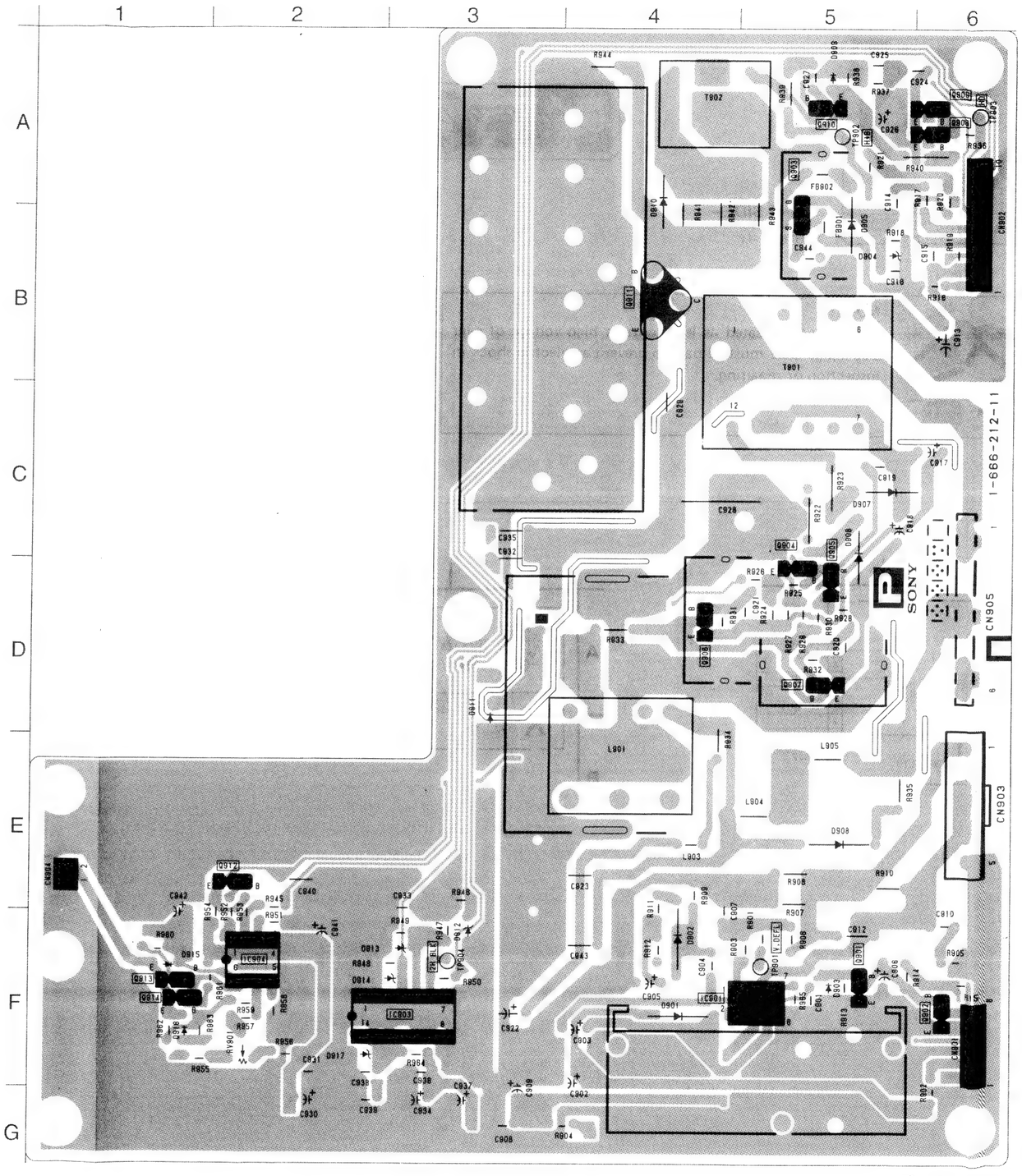
① 118Vp-p (H)	② 5.1Vp-p (H)	③ 6Vp-p (H)
④ 51Vp-p (V)	⑤ 122Vp-p (H)	⑥ 980Vp-p (H)
⑦ 1.9Vp-p (V)		

P Board IC Block Diagram

TDA8172 (IC901)



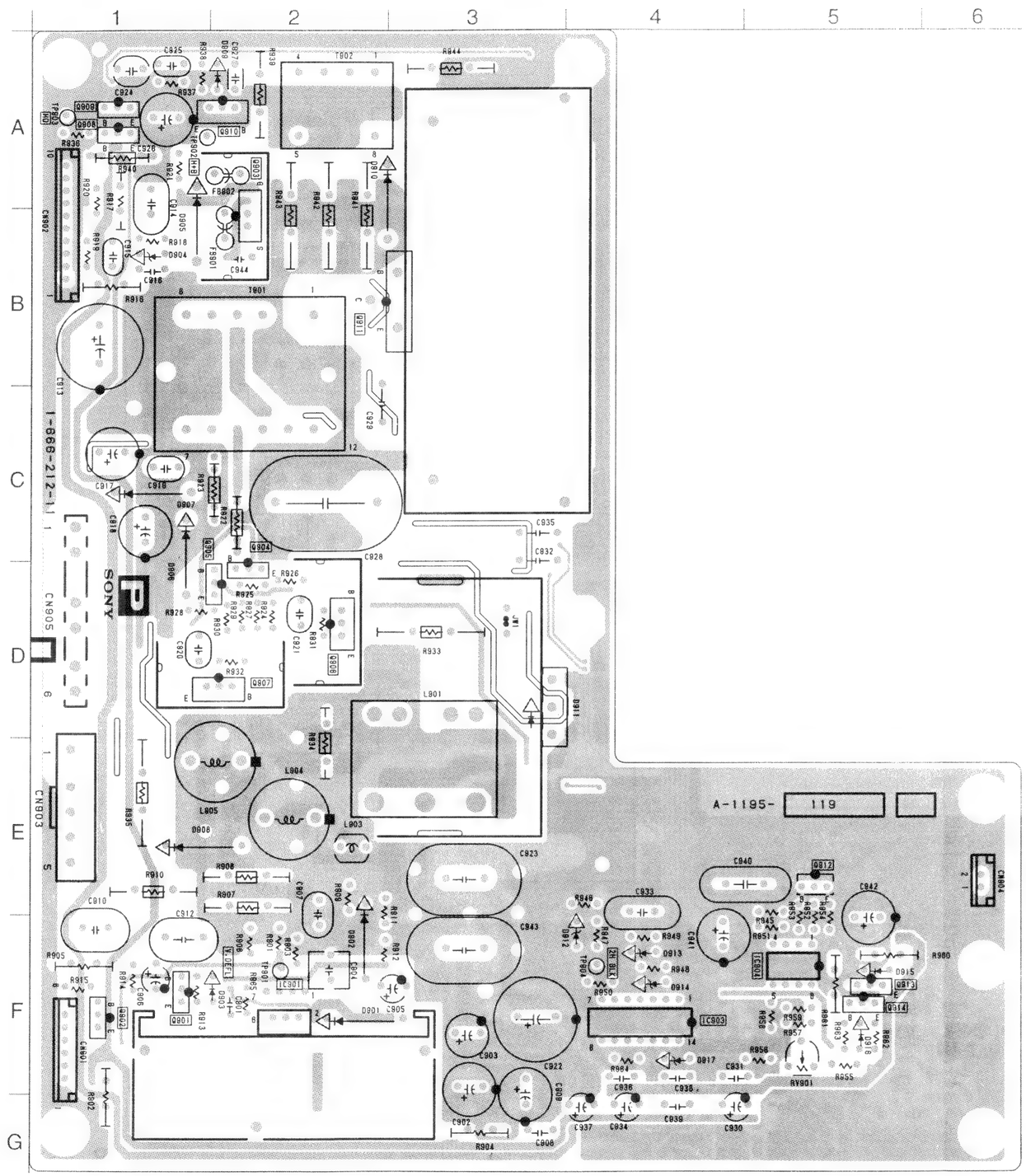
P PHM-20M8U



11-14

P –B SIDE–

SUFFIX ; -11
PHM-20M8U



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P
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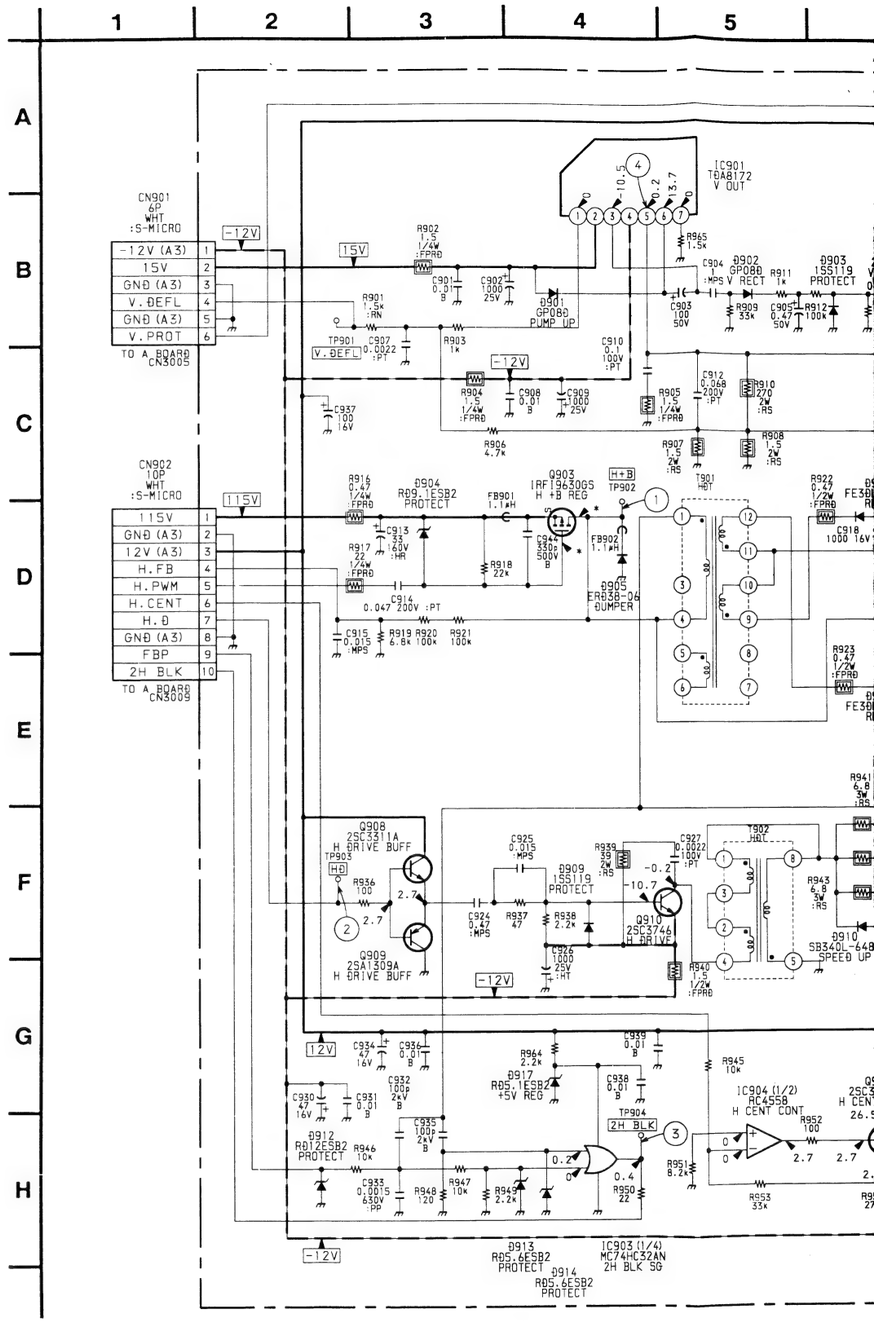
1-666-212-11

D901	F-2
D902	F-2
D903	F-2
D904	B-1
D905	B-1
D906	C-1
D907	C-1
D908	E-1
D909	A-2
D910	A-2
D911	D-3
D912	F-4
D913	F-4
D914	F-4
D915	F-5
D916	F-5
D917	F-4
IC901	F-2
IC903	F-4
IC904	F-5
Q901	F-1
Q902	F-1
Q903	B-2
Q904	D-2
Q905	D-2
Q906	D-2
Q907	D-2
Q908	A-1
Q909	A-1
Q910	A-2
Q911	B-2
Q912	E-5
Q913	F-5
Q914	F-5
RV901	F-5
TP901	F-2
TP902	A-1
TP903	A-1
TP904	F-4

P **–A SIDE–**

SUFFIX ; -11

PHM-20M8U



P **–A SIDE–**

SUFFIX ; -11

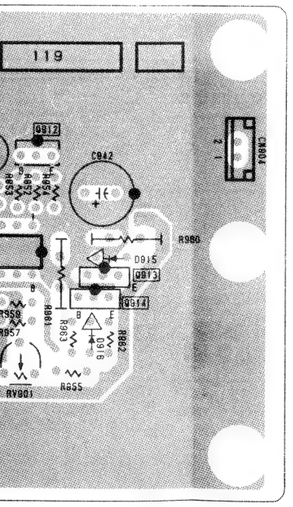
PHM-20M8U

5 6

P

1-666-212-11

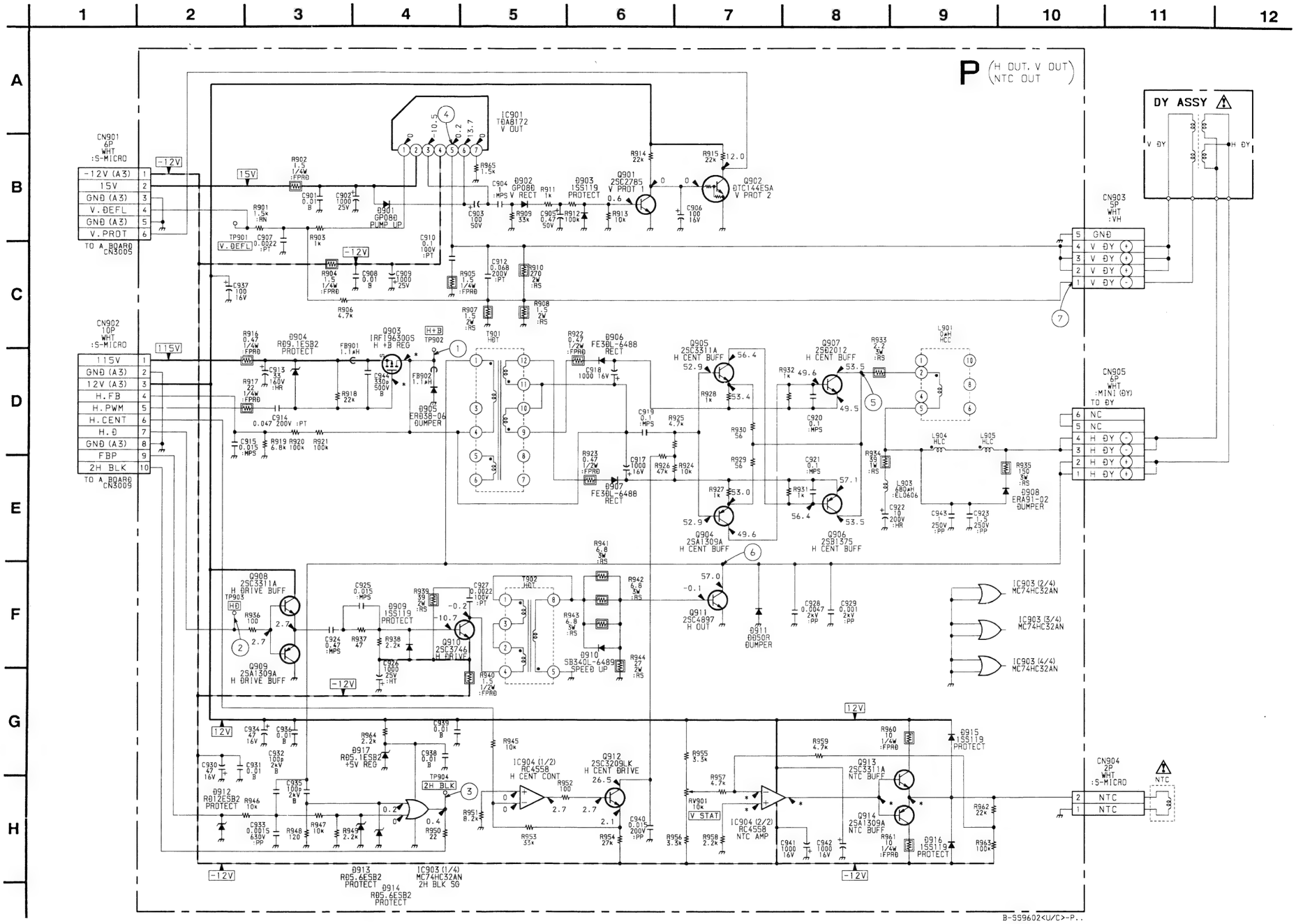
D901	F-2
D902	F-2
D903	F-2
D904	B-1
D905	B-1
D906	C-1
D907	C-1
D908	E-1
D909	A-2
D910	A-2
D911	D-3
D912	F-4
D913	F-4
D914	F-4
D915	F-5
D916	F-5
D917	F-4
IC901	F-2
IC903	F-4
IC904	F-5
Q901	F-1
Q902	F-1
Q903	B-2
Q904	D-2
Q905	D-2
Q906	D-2
Q907	D-2
Q908	A-1
Q909	A-1
Q910	A-2
Q911	B-2
Q912	E-5
Q913	F-5
Q914	F-5
RV901	F-5
TP901	F-2
TP902	A-1
TP903	A-1
TP904	F-4



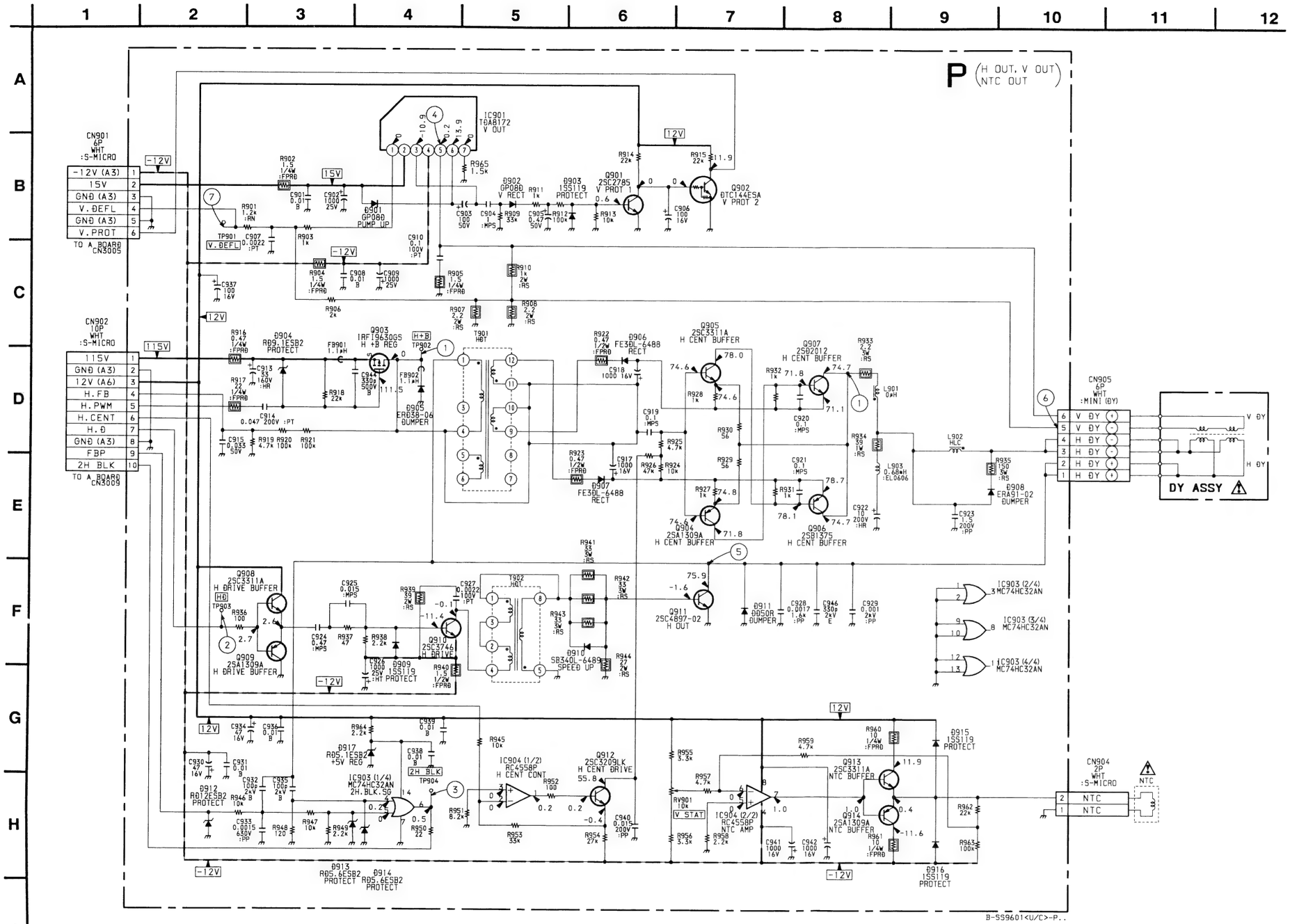
P –A SIDE–

SUFFIX ; -11

PHM-20M8U



P PHM-14M8U P PHM-14M8U



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P
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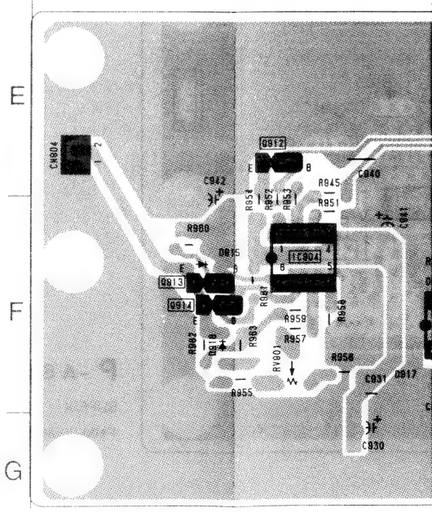
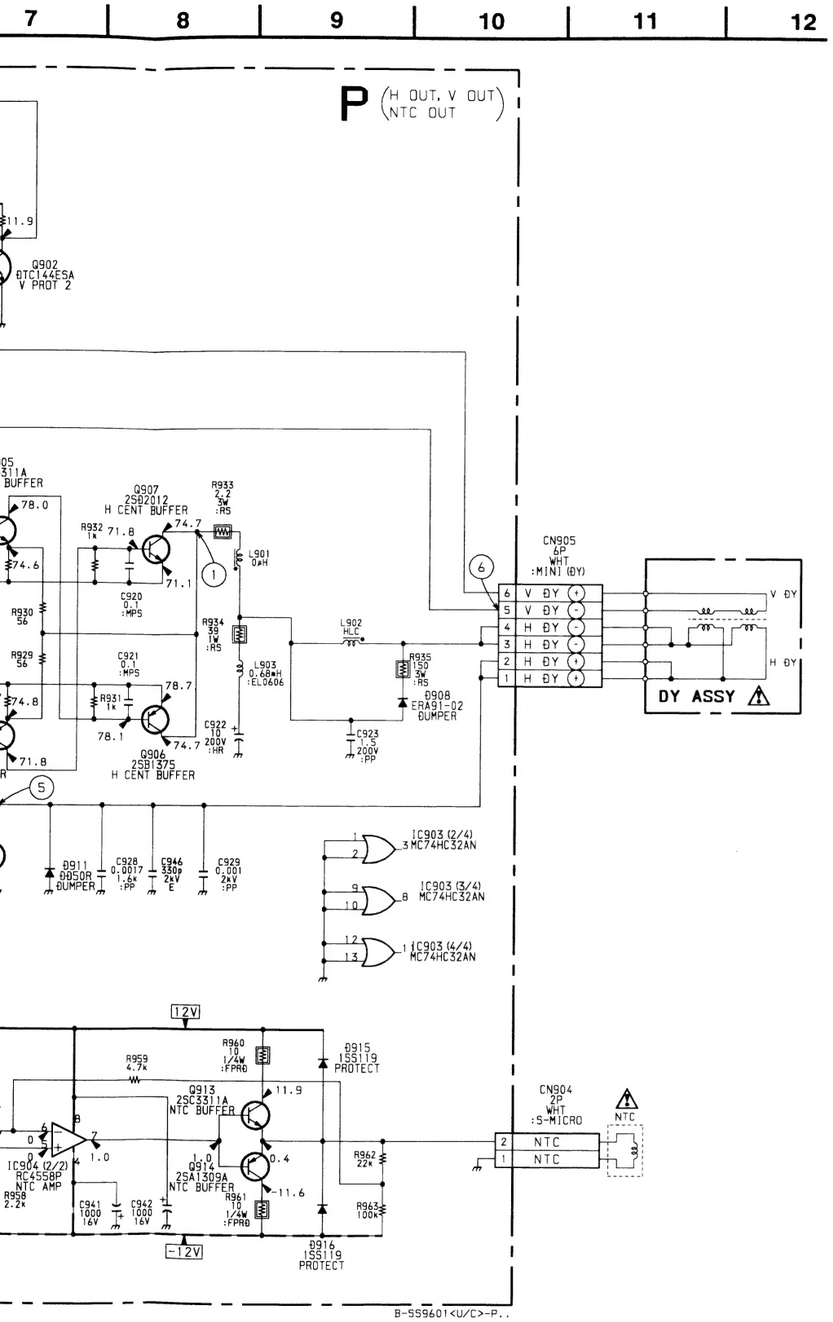
1-666-214-11

D901	F-2
D902	F-2
D903	F-1
D904	B-1
D905	B-1
D906	C-1
D907	C-1
D908	E-2
D909	A-2
D910	A-2
D911	D-3
D912	F-4
D913	F-4
D914	F-4
D915	F-5
D916	F-5
D917	F-4
IC901	F-2
IC903	F-4
IC904	F-5
Q901	F-1
Q902	F-1
Q903	B-2
Q904	D-2
Q905	D-2
Q906	D-2
Q907	D-2
Q908	A-1
Q909	A-1
Q910	A-2
Q911	B-3
Q912	E-5
Q913	F-5
Q914	F-5
RV901	F-5
TP901	F-2
TP902	A-1
TP903	A-1
TP904	F-4



11-16 11-16



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P
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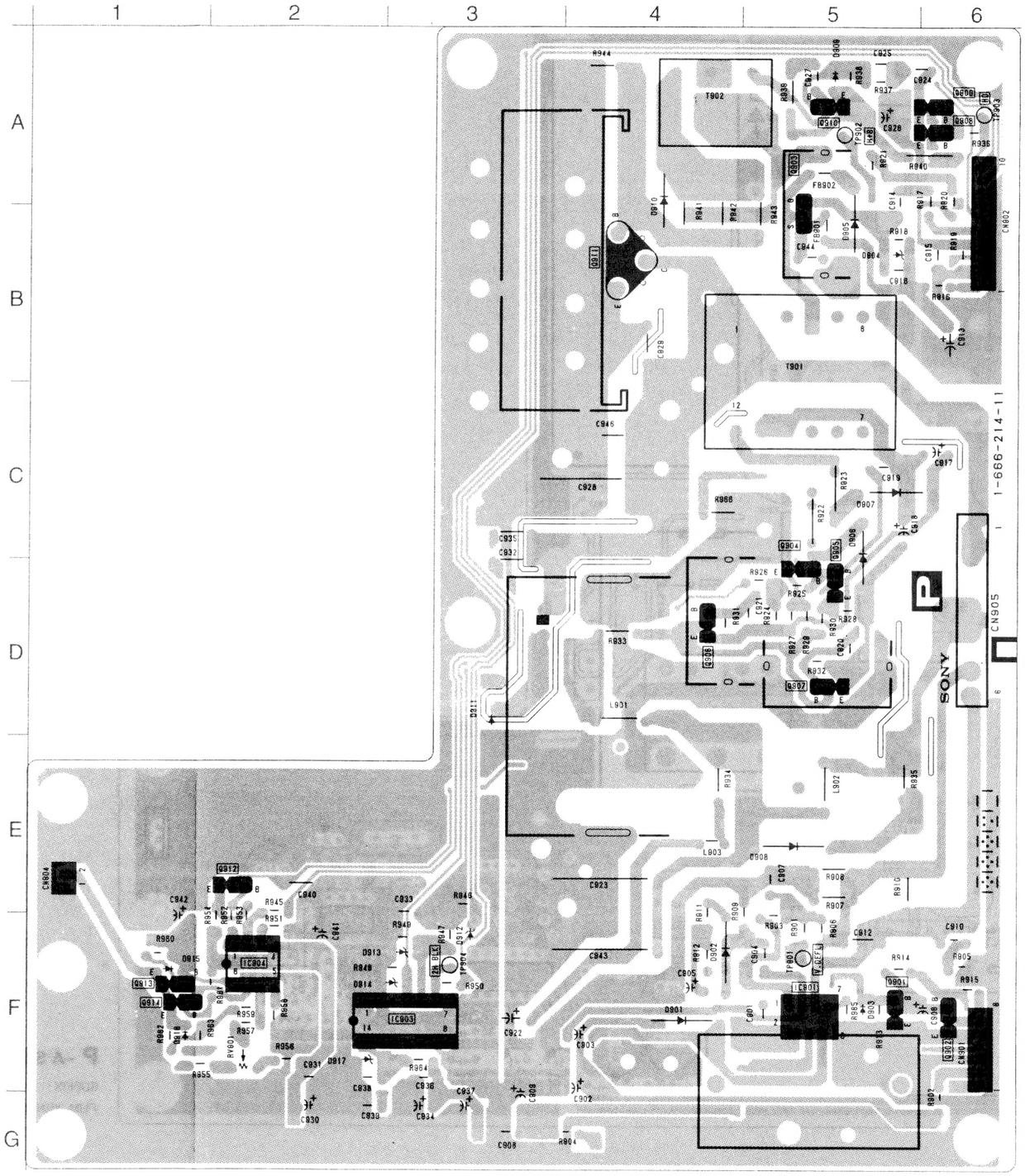
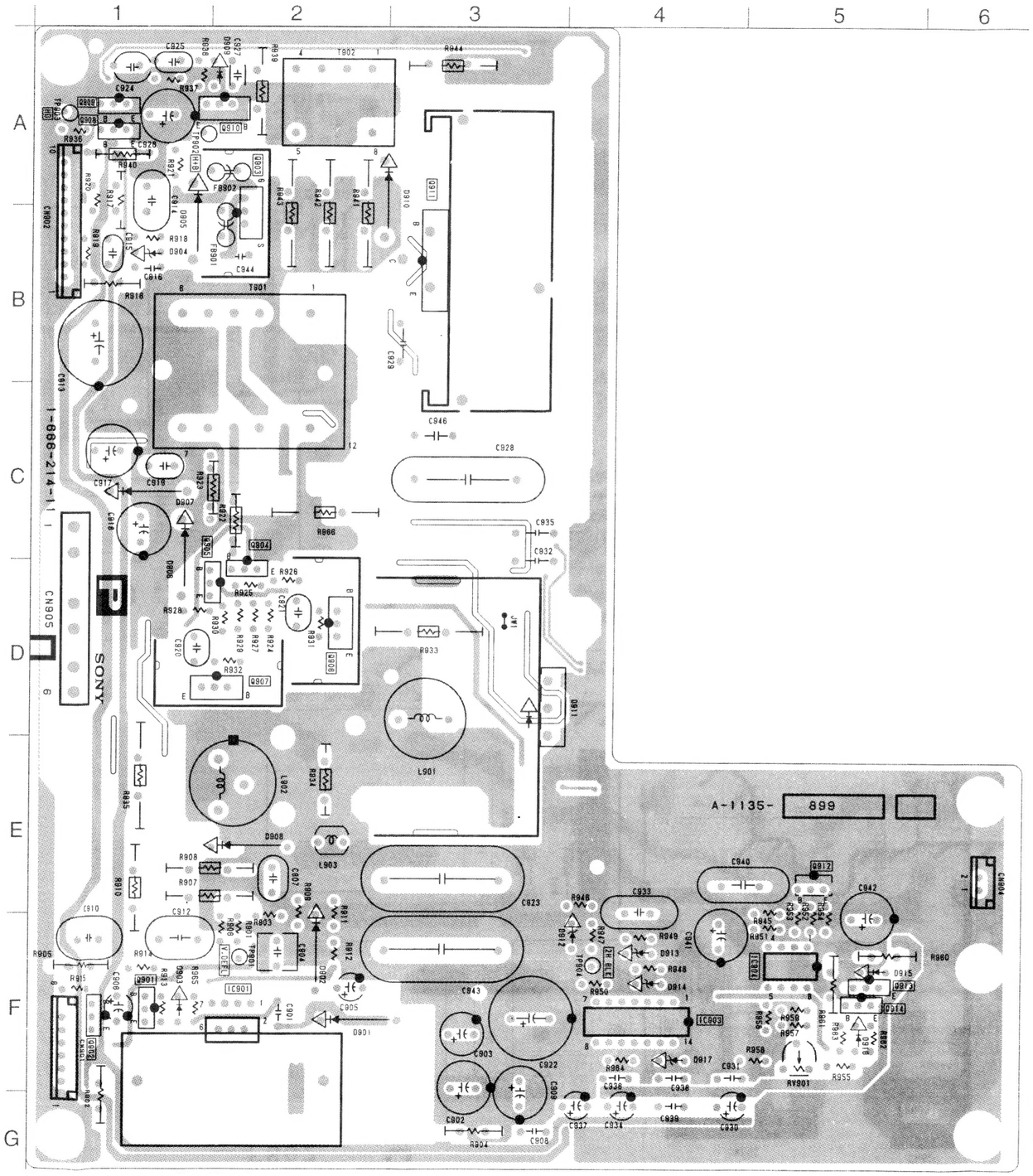
1-666-214-11

D901	F-2
D902	F-2
D903	F-1
D904	B-1
D905	B-1
D906	C-1
D907	C-1
D908	E-2
D909	A-2
D910	A-2
D911	D-3
D912	F-4
D913	F-4
D914	F-4
D915	F-5
D916	F-5
D917	F-4
IC901	F-2
IC903	F-4
IC904	F-5
Q901	F-1
Q902	F-1
Q903	B-2
Q904	D-2
Q905	D-2
Q906	D-2
Q907	D-2
Q908	A-1
Q909	A-1
Q910	A-2
Q911	B-3
Q912	E-5
Q913	F-5
Q914	F-5
RV901	F-5
TP901	F-2
TP902	A-1
TP903	A-1
TP904	F-4



P –B SIDE–
SUFFIX ; -11
PHM-14M8U

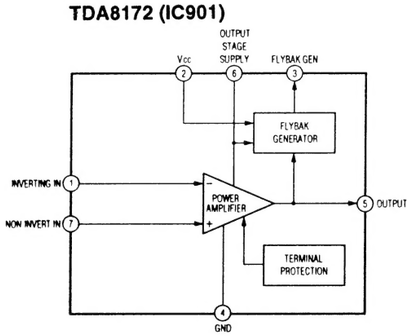


P Board Waveforms (PHM-14M8U)

① 118Vp-p (H)	② 5.1Vp-p (H)	③ 5.2Vp-p (H)
④ 5.1Vp-p (V)	⑤ 1050Vp-p (H)	⑥ 0.7Vp-p (V)
⑦ 0.8Vp-p (V)		

P Board IC Block Diagram

TDA8172 (IC901)



P –A SIDE–

SUFFIX ; -11

PHM-14M8U

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G
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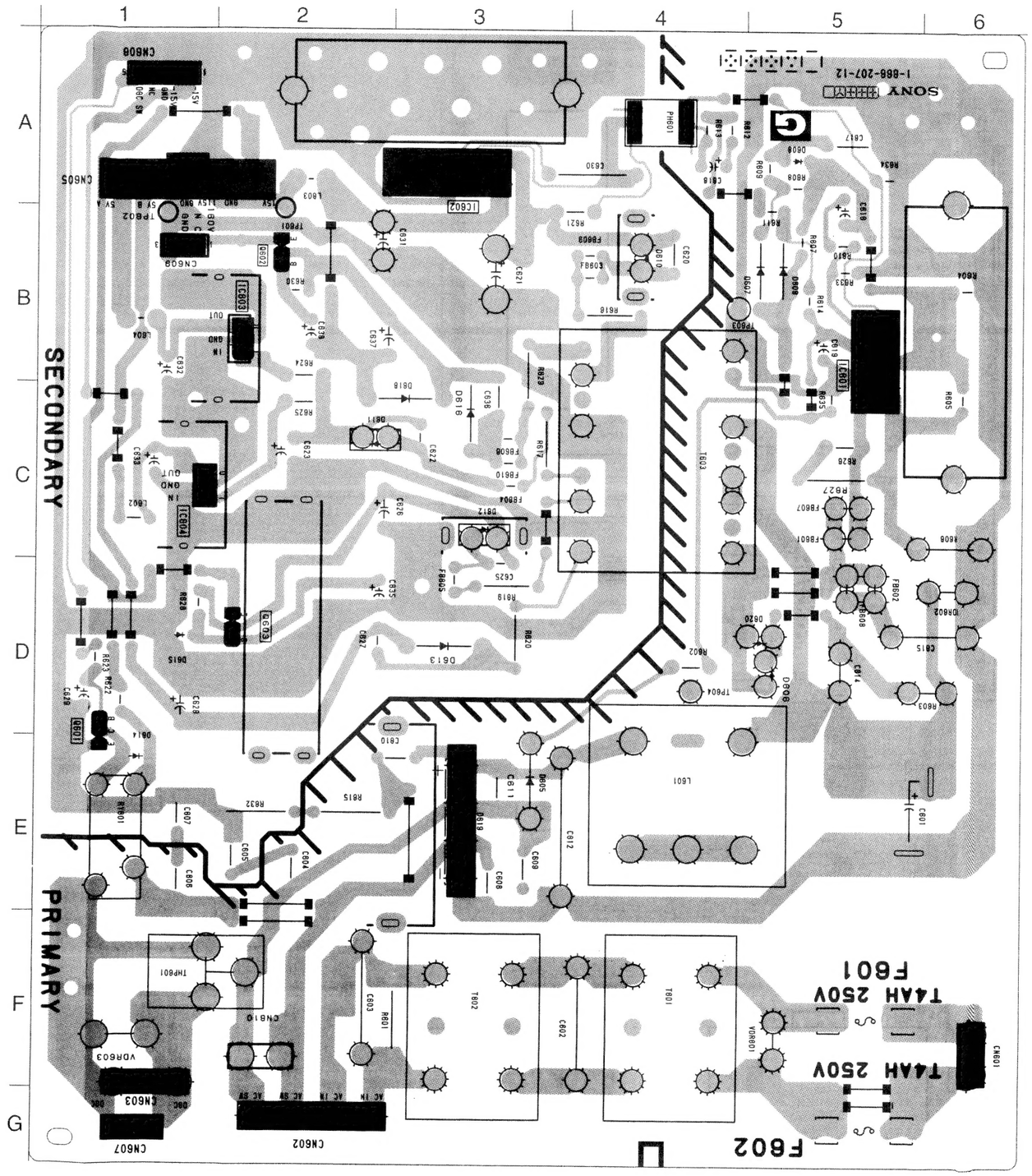
1-666-207-12

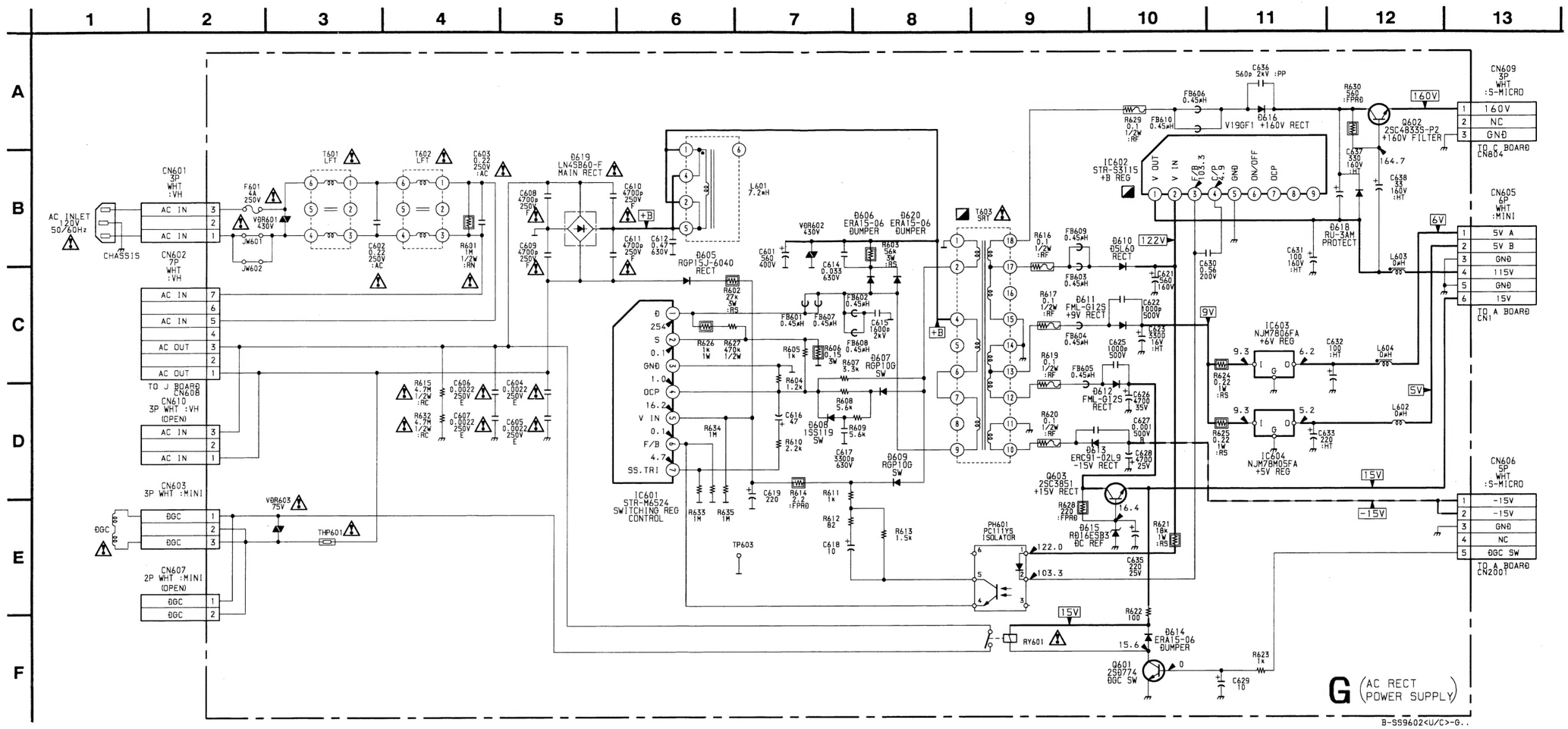
D605	E-3
D606	D-5
D607	B-5
D608	A-5
D609	B-5
D610	B-4
D611	C-2
D612	C-3
D613	D-3
D614	E-1
D615	D-1
D616	C-3
D618	C-3
D619	E-3
D620	D-5
IC601	B-5
IC602	A-3
IC603	B-2
IC604	C-1
Q601	E-1
Q602	B-2
Q603	D-2
TP603	B-5
TP604	D-4
VDR601	F-5
VDR602	D-6
VDR603	F-1



G –BS IDE–

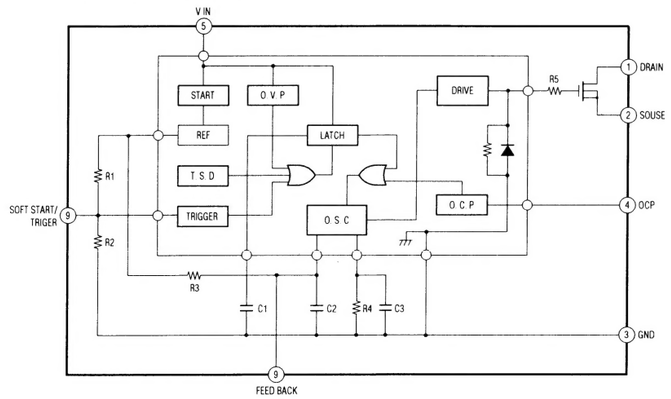
SUFFIX :12

11-18



G Board IC Block Diagrams

STR-M6524 (IC601)



STR-S3115 (IC602)